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Volume XIV July-August, 1912 Number 4

BIRDS OF THE COTTONWOOD GROVES

By FLORENCE MERRIAM BAILEY

WITH TWO PHOTOS

WHEN following the old Santa Fe Trail between Santa Fe and the Pecos Mountains, we pitched our tents for a few days' work near Glorieta in a grove of the narrow-leafed elm-like cottonwoods whose slender trunks branch above the tops of the nut pines and junipers of the region, and whose arching willowy branches hang low over a brilliant flower garden; a grove of such rare attractiveness, surrounded as it is by grave conifers, that it is commonly known as The Park, although the Spanish name Glorieta—bower or arbour—seems more appropriate. Imagine the feelings of the old botanical explorers when, after following the Santa Fe Trail over five hundred miles of plains, they arrived at this garden spot! To the ordinary traveler the groves of narrow-leafed cottonwoods, encountered occasionally on the edge of the yellow pine belt, are among the most beautiful spots in the west, where it is often hard to make comparisons in beauty. The delicacy of the foliage gives exquisite effects in the morning sunlight, and almost the effect of beech woods in the moonlight. In this Glorieta of the Santa Fe Trail the wild flower garden under the trees was bright with luxuriant painted cups, lupins, delicate pentstemons in red, purple, and white, and a deep pink phlox that was really a brilliant flower.

The beautiful grove, at the time of our visits—July, 1903—was full of birds. The loud buzzing of the Broad-tailed Hummingbird told of its presence among the flowers, and overhead among the branches the songs of Western House Wrens and Swainson and Plumbeous vireos persisted when all else was quiet. At dusk the calling of poor-wills and the booming of nighthawks was heard. During the day there were the voices of birds from the open country below and those from the edge of the mountain forest above—the *henk, henk,* of the Rocky Mountain Nuthatch and the cheery call of the Mountain Chickadee being mingled with the *tu-whit, tu-whit, tu-whit,* of the Gray Titmouse, the lisping of goldfinches, the

'willowy' note of the Red-shafted Flicker, the monotonous mew of the Green-tailed Towhee, the bright song of the Spurred Towhee, the loud calls of Cassin Kingbirds and crested jays, the soft cooing of doves and the harsh croaking of a family of talkative young ravens.

On the edge of the grove in a clump of bushes a Western Chipping Sparrow had a nest, and within the grove were found a number of nesting holes in cottonwood trunks or branches. Of the householders, a pair of Sparrow Hawks were feeding young, two families of jolly excitable Western House Wrens were singing and fluttering their wings with abandon, and a less demonstrative Chestnut-backed Bluebird perched on a few inches of broken branch close to the trunk of a tree, uttering an occasional low sweet warble. At nest holes high up in a tree trunk we were delighted to discover beautiful Violet-green Swallows going in and

Fig. 42. THE GLORIETA OF THE TAOS INDIANS
Courtesy of Biological Survey

out. It was altogether a most lovely place. Big yellow butterflies fluttered through the delicate foliage of the grove, and before mountain thunder storms radiant white cloud piles were seen through green oriel windows.

Another beautiful park, in which the stately trees spaced a grassy floor, was in the Conejos River bottoms, just across the line in Colorado. We were there in early September, when bands of migrating warblers and their associates often passed through the cottonwood tops. As I stood in the shadow breathlessly watching the approach of one such troop, Long-tailed Chickadees worked slowly along from tree to tree stopping to hang head down over some dainty morsel, Golden Pileolated Warblers whipped about, and Audubons hunted energetically through the branches, while a quiet Townsend sat looking around enquiringly

for its prey; Pygmy Nuthatches chattered softly, vireos sang their leisurely songs, and one hunted so near that its eye-ring, lores, and wing bars stood out conspicuously; while a preoccupied Orange-crowned Warbler coming from the greenery toward the light almost flew against my arm hovering unsuspectingly close to my face. As the busy throng hunted through the cottonwood tops, a pair of Catbirds mewed in the thicket below, and Western House Wrens and Green-tailed Towhees went about their lowly business. Among the visiting migrants one solitary Rocky Mountain Creeper was seen on a cottonwood trunk.

Another grove of the beautiful cottonwoods near the Taos Pueblo, the Glorieta of the Indians, was perhaps the most notable that we saw. The old trees had seamed patriarchal trunks and their high-arching branches carried their finely cut leafage low to the ground. Many of the great trees had twin trunks, some stood alone, others in brotherly groups. An artist when visiting camp talked enthusiastically of the subtle tints of their bark and the effect of afternoon sunshine permeating their delicately foliaged green tops. The cottonwood trunks rose from a dense thicket of undergrowth —scrub oak, juniper, and wild plum, tangled with rose and overgrown with poison ivy and clematis whose festooning vines made banks of green and white bloom. In this thicket in which our camp was a cleared circle, birds abounded. Spurred Towhees scratched among the leaves and flew up to sing on the plum bushes, and one black-headed parent was discovered busily feeding grown young who were following him around teasing with hungry insistance. A small Wright Flycatcher, when not too busy feeding its young in the nest over our tent, kept up a pleasant *see-wick, see-wick, see-wick,* and *swee-hoo,* while a Western Flycatcher reiterated *cat-it, cat-it, cat-it,* and vireos and many other small feathered householders sang and hunted in the shade of the tree tops in the sunny mornings, filling the grove with their delightful music.

Fig. 43. THE NARROW-LEAFED COTTONWOOD
Courtesy of Biological Survey

A teasing song that I did not recognize, one morning led me into the dense growth bordering the irrigation ditch of the Taos Indians. When whistled to, the invisible bird answered back promptly—or so it seemed—between songs moving about getting his breakfast. But where was he? When finally discovered, his dark gray head and breast were cut off so sharply from the yellow belly that went

with the sunlit branch below, that the only wonder was that *tolmiei* had ever been separated from his background. For it was he, the lovely little Macgillivray Warbler, an old friend of the Sierra and close relative of *philadelphia*, the mourner of the east: a most charming bird, when he sat on a branch in the sun and threw up his head to sing his rich finch-like song. A few days later under the cottonwoods in a dense tangle of wild plum, wild rose, maple, and poison ivy, *tolmiei* was encountered in a still more attractive role. The absorbed musician was now the anxious guardian of the nest. He and his mate with food in their bills circled around the intruder chipping and switching their tails noncommittally. When they passed through a patch of sunlight the green on their backs warmed up prettily, and when the female went to a distance the white spots on her eyelids proved a good mark for an intimate friend to follow. And—there was the nest! Only about a foot above the ground in a small bush overgrown with clematis the pretty cup held four precious but undeniably plain nestlings with fuzzy heads and yellow bills.

In wandering about the grove we sometimes met a secretive pair of birds with a suggestive billful flying swiftly where we could not follow, or found a feathered parent trying to get its unduly trustful young out of our path—among them, robins, wrens, and towhees—and one day—beside the road outside the grove—we were stopped by the pitiful cries of a pair of Catbirds whose last young one had just been killed. Its little headless body was lying in the nest bearing mute testimony to the horrid act of some pitiless prowler. Eastern Catbirds seemed singularly out of place here, among Macgillivray Warblers, Audubon Thrushes, Black-headed Grosbeaks, Mountain Bluebirds, Violet-green Swallows, and other westerners, but they were near the limit of their southwestern range.

Near the edge of the grove a Red-naped Sapsucker whose family were out of the nest was seen a number of times flying from a stub diagonally to the ground where, on investigation, there proved to be a colony of ants.

Outside the grove the arid sagebrush flat dotted with piñon pine and juniper marked off by the water line of the creek and its irrigation ditches offered congenial homes for the Woodhouse Jay and the green towhee; and a stealthy brooding green towhee with rufous crown and white chin much to our delight was caught slipping from her nest in a clematis-clad sagebush near the ground. About the clumps of red gilia bordering the woods, Broad-tailed Hummingbirds whizzed noisily, darting off with such lightning speed that they were not followed home. Goldfinches often passed over, and one party consisting of a male and several females flew down to a cliff rose and the male began tweaking out the long-tailed carpels of cercocarpus.

From the sagebrush we looked up over the foothills to the timbered mountains above, the old hunting grounds of the Taos Indians, and from the ridges and the canyons in the evenings came the familiar *peent* of nighthawks, and that most deliciously soothing note of western twilights, *poor-will, poor-will, poor-will, poor-will-low.*

NOTES ON THE WADING BIRDS OF THE BARR LAKE REGION, COLORADO

By ROBERT B. ROCKWELL

WITH THIRTEEN PHOTOS BY THE AUTHOR

THE previous papers relating to the bird-life of the Barr Lake region, which have appeared in THE CONDOR, have dealt with species which, either through their relative abundance or through the ease with which their nests were located, have made possible a more or less connected account of their breeding habits. The species mentioned in this paper are on the other hand species which breed in such limited numbers, or whose nesting habits vary so little as to

Fig. 44. TYPICAL NEST AND EGGS OF BITTERN

make an extended study of these habits either impossible or so little removed from the ordinary as to be unworthy of publication.* It will therefore be the purpose of this paper as far as is practicable to lay before the reader (even at the risk of a disconnected recital) only those facts which throw new light upon the habits of this very interesting class of birds. As an aid to easy reference it is probably best to treat each species separately in the order of the A. O. U. nomenclature.

Botaurus lentiginosus. AMERICAN BITTERN.

Bitterns were among the commonest birds around all the rush-bound ponds, but owing to their retiring habits they were seldom seen except when flushed, and as they were close sitters fewer nests were found than the relative abundance

*All the notes upon which this paper is based were taken in company with L. J. Hersey.

of the birds would lead one to expect. All the nests found by us conformed closely to the published descriptions, and there was practically no variation in material, construction or location. The young are very queer looking little balls of yellowish down, from which protrudes a long sharp bill, and the most malignant pair of eyes to be found in the bird world. In fact I know of no bird disposition that could equal that of these helpless little creatures in genuine "cussedness". The slightest noise or motion transforms the cuddling little chicklets into evil-looking little fiends, that attack an outstretched finger or strike with the ferocity of a tiger. Their note of anger is a loud, forbidding hiss, very snake-like in quality (possibly a natural protection from the bullsnakes which infest their nesting grounds) and more than one nest was found that would have otherwise been passed by but for the demonstration occasioned by our approach. As soon

Fig. 45. YOUNG BITTERNS IN NEST

as they are able to leave the nest, this aggressive nature deserts them and they are the same skulking secretive birds as the mature adults, although they show some fight if handled.

One peculiar example of "bittern nature" came to our notice. While working through a very dense cover of cattails and rushes we came upon an adult bittern which permitted us to pick it up. A thorough examination failed to reveal any injury, so we decided to photograph our captive. However, when we endeavored to pose him he would either flop down in a most dejected heap or would dart for the rushes with most surprising speed, which would be the occasion for some highly edifying (for the other fellow) speed tests upon our part. Finally after a dozen fruitless attempts we decided to see if his wings were injured so tossed him as high as possible into the air. He very promptly and

gracefully took wing and our last glimpse of him showed him flying true and strong over half a mile away. Whatever induced that bird to permit us to pick him up and handle him in the way we did will of course remain a mystery.

The birds arrived in the latter part of April (the 25th) and eggs were laid the latter part of May. An unusually early nest contained three young and two eggs May 26, 1906. A nest containing two fresh eggs on May 24, 1907, contained freshly hatched young on June 22. The young develop much faster than young of the Night Herons, and upon the strength of rather scanty data I think they leave the nests within two weeks after hatching.

Rallus virginianus. VIRGINIA RAIL.
Porzana carolina. SORA.

Both species of rails nested in large numbers, the Virginias apparently being somewhat commoner than the Soras. Both species frequented the lush, wet,

Fig. 46. NEST AND EGGS OF SORA SHOWING GRASSES BROKEN DOWN OVER NEST TO FORM A SORT OF CANOPY

seepage land and the nests were almost without exception found in clumps of dense, long, round-stemmed marsh grass. The concealment of these nests was wonderful, fully equalling if not surpassing the best concealed nests of the Teal ducks. It was practically impossible to flush the birds directly from their nests. They would skulk through the grass for a dozen feet or more and then take flight. Even where we knew the location of the nest and dashed up at full speed we were seldom able to make the bird take directly to the air.

The habit of the Soras of bending over the tops of the grasses and rushes surrounding the nest to form a sort of canopy over it is I believe peculiar to this species, and well built nests of this type are among the most beautiful of the ground nests.

Eight eggs appeared to be the average set of the Virginia Rail although one set of eleven eggs was found. On the other hand we encountered several birds incubating very small sets. Two or three sets of three and four incubated eggs were examined; and one persistent bird, found with a nest containing one egg on May 18, 1907, was visited weekly and was still brooding the single egg three weeks later, on June 8. The young rails leave the nest very soon after hatching and are quite noisy. Several young Virginias examined were covered with coarse *jet black* down.

The Sora sets averaged somewhat larger, sets of ten and eleven being common, and two sets numbering thirteen and fourteen eggs respectively were found. In many instances one or more eggs from a nest would be found on the ground near the nest, whether displaced intentionally or accidentally by the parent we could not discover. The average date for fresh eggs of the Soras was about

Fig. 47. TYPICAL NEST, EGG AND YOUNG OF COOT

June 15 and we found that many of the sets hatched about July first; but the Virginias were fully a month earlier. One half-grown young Virginia was found June 15, 1907, and a week later the rushes abounded with them. One belated set of seven fresh eggs was found July 6. Data is accumulating steadily, that will eventually place the Virginia Rail definitely among regular Colorado winter residents.

Fulica americana. Coot.

Second only to the Yellow-headed Blackbirds in numbers come the Coots Every lake and pond was alive with them, and literally thousands of these birds are hatched every year along the Barr chain. The nesting season extends through May, June and July. Our earliest complete set was found April 27, the first egg of which must have been laid April 18. This set hatched May 11. Nests with eggs were seen as late as July 21, and immature birds were much in evi-

dence until early August. In the large number of nests examined were found wide variation in construction and location. Most of the nests were built well out toward the edge of the cattails over water three or four feet deep, others were built in close to shore in very dense cattail thickets. One nest was found built on dry ground, another fully two feet above the ground on a platform of dead cattails, with a neat run-way leading up to it; and still another nest fully four feet above ground in the lower branches of an apple tree, the water of the lake having receded that much after having inundated the orchard. Two nests were seen far out on open water that were readily visible at a distance of one hundred yards. One nest was found that looked exactly like a grebe's nest; another was built entirely of weed-straws; still another entirely of freshly cut *green* cat-tails and one over deep water was made entirely from green moss brought up from the bottom of the lake.

Fig. 48. NEST OF COOT BUILT ON PLATFORM OF DEAD RUSHES TWO FEET ABOVE GROUND WITH RUNWAY LEADING UP TO EGGS

Complete sets ranged in number from six to thirteen and one set at present in the writer's collection contains seventeen eggs. Minute examination of this set has failed to reveal two types of eggs as would likely be the case if this set was the product of two birds. When found the eggs in this set were arranged in two layers in the nest, and even then it must have been practically impossible for the brooding female to cover the entire clutch. In several instances we proved that an egg was deposited each day. Incubation is apparently not begun until the set is complete, as all the eggs in a nest usually hatched on the same day.

The parent birds when disturbed during incubation have a very peculiar fashion of swimming out a few yards from the nest, uttering a low moaning or croaking note of protest. Then with head low over the water, feathers puffed out and wings held away from the body, the bird will suddenly rise just off the water, and by kicking rapidly backward with both feet, will send a shower of spray in the general direction of the intruder. This performance will often be repeated time after time and is a very grotesque and expressive method of exhibiting the bird's displeasure.

The parents are quite devoted to their nests but will seldom allow one to approach closer than a dozen yards before seeking safety out on the water, but seldom if ever do they take flight upon leaving the nest and then only in cases where they are greatly surprised.

The young are covered with coarse black down, with a bald spot on the top of their heads of a livid red color. They swim with wonderful strength and speed, a baby only a couple of days old swimming almost as fast as a man can walk. They take advantage of natural cover much as the young grebes do, but seem less wild than any of the other young wild birds.

Steganopus tricolor. WILSON PHALAROPE.

The most baffling bird as regards nesting habits with which our field work brought us in contact was this pretty phalarope. In point of numbers they were second only to the Killdeer among the shore birds, and throughout the nesting season there was hardly a trip in which we did not encounter parent birds whose actions made it plain that we were very close to their nests; yet in all these trips

Fig. 49. FREAK NEST OF COOT COMPOSED ENTIRELY OF YELLOW WEED STALKS

scattered over several years, the writer has been favored with the sight of but two nests.

The birds arrived late in April and by May 10 were seen in goodly numbers, usually in flocks of fifty or more. A week or two later the birds were still in flocks but were apparently mated. During 1906 evidences of nesting were not noted until June 10; in 1907 no anxious parents were noted until June 15; but in 1908 the birds were unusually numerous and showed every indication of the proximity of nests as early as May 29. In fact one of the two nests mentioned above was found June 16, and on that date contained three young just hatched and one egg which was afterward found to contain a fully developed dead embryo. This nest was a scanty affair of dry grass built in sparse marsh grass fully 100 feet

from the shore line on a small island and was upon thoroughly dry ground. The nest was discovered through the tell-tale actions of the parent.

That the nests are wonderfully well concealed both through the protective coloration of the eggs and through the cunning of the parent birds is beyond question; yet this alone would hardly explain our lack of success in finding these nests, for had the birds been actually nesting in the numbers their relative abundance would seem to indicate, it would hardly have been possible for us to fail in our search so consistently. The suggestion was offered that while the birds were quite abundant each year, possibly only a small proportion of them were breeding birds, and that the non-breeders joined the breeding birds in a demonstration when the intruder approached the nesting site. The fact that throughout the nesting season Phalaropes were seen in flocks of various sizes would seem to support this theory.

Recurvirostra americana. AVOCET.

Among the most interesting experiences during the Barr lake work was our study of the nesting Avocets. The birds first made their appearance the last week in April (1907) and on account of their size and conspicuous coloring they were easy to keep track of. We kept a sharp lookout for their nesting site throughout May and June, and finally decided that they must be breeding on a small island far out in the big lake. A trip to the island on June 30, failed to reveal any nests although the birds showed every evidence of having nests nearby. On July 4, 1907, we visited the island again and as we landed, a female Avocet flew up about twenty-five yards back from shore and upon walking directly to this spot we found a nest containing four eggs. About twenty yards from this point we found a second and thirty yards farther on a third, each containing four incubated eggs.

Fig. 50. NESTING SITE OF AVOCET ON ISLAND

The nests were all located in very similar locations, among a young growth of cockle-burrs not over six inches in height and which had probably grown at least half of that since the eggs were laid. The cockle-burrs formed a belt about ten yards wide clear around the island just below the dense blue-stem and other rank grass with which the island was covered and on ground that was under water during the high water of the spring although inundated for a short time only. Two of the nests were very crude affairs, being a mere shallow hollow in the sand with a very few dead weed stalks of short lengths arranged around the eggs. The

other was constructed in the same manner, but was quite well lined with weed stems, so that the eggs did not touch the ground. There was no evident attempt at concealment, the nests all being placed in small open spaces from six inches to a foot in diameter, and with nothing to protect them; but the color of the eggs was sufficient protection to make them quite inconspicuous.

The birds continually showed signs of uneasiness, staying usually at the edge of the water and occasionally flying over us with their loud, ringing cry. Sometimes they would affect a broken wing, but the effort was rather awkward and the deception was very apparent. They acted much as a Killdeer does and while quite demonstrative, did not betray the whereabouts of the nests by their actions, only that they flushed from them directly, instead of running along the

Fig. 51. NEST AND EGGS OF AVOCET

ground before taking wing. When not flying about overhead the birds often lit on the water where they swam easily and lightly, and they seemed at all times very anxious to get back to the nests, returning as soon as we were a short distance from the nests.

Upon our return to the island on June 21, we found that the nests had been disturbed; two of them were deserted and about half of the eggs were missing. On July 28 we found to our sorrow that all the nests had been destroyed; at least so we surmised as we did not find any young birds.

On May 31, 1908, we visited the island again and found to our surprise that the colony was nesting fully five weeks earlier than in the preceding spring. On this date we found eight nests: seven on the island proper and one on the sand-

bar leading to it from the shore (as the water was now very low). The seven were typical nests, built in the zone of pig-weed and young cockle-burrs exactly like those of the preceding year; while the one on the sand-bar was a neat depression in the sand well lined with grass. There was not a particle of vegetation or cover on the sand-bar, but on account of their coloration the eggs were very inconspicuous, even in their exposed position. On this occasion the birds were very noisy and demonstrative and we located the nests readily by their actions.

On June 14 we found that two of the nests had been destroyed, some bird having pecked small holes in the eggs. All the other nests had either hatched or been destroyed as we did not find either nest or young. On June 19 we found another nest of four eggs on the island but still no sign of young birds, and on June 27 this nest was found to have been destroyed as the others had been. We finally concluded that the mischief must have been done by a good-sized flock of non-breeding Ring-billed Gulls which made the island their headquarters.

The birds remained until the latter part of October, well into the hunting season, and their large size, conspicuous coloration and absolute lack of fear of firearms made them easy prey for the thoughtless hunters who frequented the lakes.

Gallinago delicata. WILSON SNIPE.

Up to very recent years the published records of Wilson Snipe as a breeding bird of Colorado, were confined to four records: that of Drew who found it breeding in San Juan County (B. N. O. C. IV, 1881, 85); that of W. E. D. Scott who found it breeding at Twin Lakes, Lake County, at 9,000 feet (B. N. O. C. IV, 1879, 92: and that of Aiken at the San Luis Lakes at 7500 feet elevation and that of Sprague (Cooke) at 9000 feet in the Middle Park. All of these records are Transition and Canadian zone records, and the first two at least are of such an indefinite nature that it is a question whether nests were actually found or whether the breeding record was based only upon the presence of the birds during the nesting season.

From 1905 to 1909 Fred M. Dille found several nests near Altoona, Boulder County, close to the foothills and at an elevation of about 5500 feet. As these sets were taken just inside the Transition zone, the single nest which we found at Barr June 20, 1908, is, so far as I know, the first breeding record for the species within the Upper Sonoran zone of Colorado.

This peculiar bird occurs regularly though not commonly at Barr throughout the nesting season, and the fact that more nests have not been found may no doubt be attributed alone to lack of field work. In fact we encountered several pairs of birds which we were reasonably sure were nesting, but we were successful in one instance only.

This nest was located on (and above) the surface of slightly damp ground at the edge of a good sized area of very soft, boggy land formed by the seepage under the dike of the Big Barr Lake. It was built in the center of a tussock of grass about eight inches in length and was a very neat, well shaped and cupped nest composed entirely of fine dry grass. In construction it was far superior to any shore bird's nest I have ever seen, being so compactly and strongly put together that it was possible to remove it from the nesting site without injury. In general appearance the nest itself is not unlike certain sparrows' nests.

It was not particularly well concealed; in fact from above it was quite conspicuous. The bird flushed when we were about fifteen feet away and made quite

a demonstration. Of the four eggs, one was quite fresh, and the other three were in various stages of incubation.

On several occasions we noted the peculiar "nuptial gyrations" in the air, which have been graphically described by some writers.

REMARKS UPON THE OCCURRENCE OF SEVERAL SPECIES OF LIMICOLAE

W. W. Cooke in the 'Third Supplement to the Birds of Colorado' (Auk, XXVI, 1909, 411), in speaking of the Western Solitary Sandpiper says: "The early publications on Colorado Ornithology included this species among the breeding birds of the state, and the same reference has been continued by subsequent writers. As neither eggs nor young birds have ever been reported from the state the assumption of breeding rests on the presence of the birds in pairs during the summer season. Late investigations have shown that many non-breeding Solitary

Fig 52. NEST AND EGGS OF WILSON SNIPE

Sandpipers remain through the summer far south of the breeding grounds, and also that the southward migration of breeding birds begins soon after the first of July. In the light of these facts it must be considered that, though the species probably does breed in Colorado, yet the actual breeding is not yet proven."

While this statement was written over a year after the last of our work at Barr it confirmed our observations so thoroughly and applied so well to several species beside the one it referred to, that it has been copied verbatim. The most puzzling problem which confronted us was the status of the several species of Sandpipers and other waders, whose breeding ground was generally supposed to be in the far north, which yet were quite common at Barr during at least a portion of the breeding season. The closest attention was given these species, and much time was spent in an effort to definitely establish some of them as breeders, yet

in only one instance did we encounter any birds whose actions gave us any reason to believe that they were actually nesting.

This was a Least Sandpiper which was seen on a small stretch of sandy beach on May 24, 1907; and a week later (May 30) the same bird (presumably) was seen at the same place and exhibited some excitement at our intrusion. The bird was very tame and even when frightened, refused to leave the vicinity of the supposed nesting site. However the most minute search failed to reveal a nest.

As we were unsuccessful in making any definite discoveries the actual dates will be given, leaving the reader to form his own opinions.

Macrorhamphus griseus scolopaceus. LONG-BILLED DOWITCHER. Observed

Fig. 53. NEST AND EGGS OF UPLAND PLOVER

April 26, 27, May 1, 11, 24, and July 5, 1907; and April 26, May 10 and May 17, 1908.

Micropalama himantopus. STILT SANDPIPER. Observed April 27, July 5, and October 5, 1907, and May 9, 1908.

Pisobia maculata. PECTORAL SANDPIPER. Observed April 21, 26, July 28 and October 5, 1907.

Pisobia bairdi. BAIRD SANDPIPER. Observed May 11, July 21, 28, September 2 and October 5, 1907; and May 2, 10, 17, 30, August 15 and 22, 1908.

Pisobia minutilla. LEAST SANDPIPER. Observed April 26, May 1, May 24, May 30, July 5, July 21, 28, September 2 and October 5, 1907; and April 26, May 3, 10, 17, June 14 and June 19, 1908.

Limosa fedoa. MARBLED GODWIT. Observed June 24, 1906; May 11, 17, July 5, 28, 1907; and May 10 and 30, 1908.

Totanus melanoleucus. GREATER YELLOW-LEGS. Observed April 26, May 11, July 4, 6, 14, 21 and 28, September 2, and October 5 and 25, 1907; and April 19, May 3, June 27, July 12, and August 15, 1908.

Totanus flavipes. YELLOW-LEGS. Observed April 21, 27, July 5, 21, 28, September 2 and October 5, 1907; and April 19, 26, May 17, June 28, July 12, August 15 and 22, 1908.

Catoptrophorus semipalmatus inornatus. WESTERN WILLET. Observed May 11, 18, July 21 and 28, 1907; and April 20, May 3, 10 and June 19, 1908.

Throughout this list of dates a remarkable similarity of movement appears to exist; the last three weeks of June being the only ones during the entire breeding season that most of the above species were not seen. It is also significant

Fig. 54. TYPICAL "NEST" OF KILLDEER

that the five species which were seen during this period (namely, Least Sandpiper, Marbled Godwit, both Yellow-legs, and Western Willet) are the species most likely to be found breeding in this locality. Generally speaking the month of June appears to be the month during which all these species are least in evidence, and a decided influx of the birds is seen soon after the first of July. In short the dates here given bear out Prof. Cooke's theory almost to the letter.

Bartramia longicauda. UPLAND PLOVER.

Cooke in his "Birds of Colorado" states that the Bartramian Sandpiper breeds *abundantly* upon the plains. The word "abundant" is at best a relative word; yet during ten years field work the one nest we found near Barr was the only one I have ever seen, nor have I heard of any other Colorado field workers who have actually taken the eggs, and so far as I am aware there are no definite

published breeding records for the state except that of Cooke. Although there is small doubt that the bird breeds sparingly on the plains east of Denver, it can hardly be called common anywhere in Colorado. For these reasons description of this nest may be of value.

The nest which was found June 28, 1907, was located in the midst of a rather thick tuft of sand grass, blue stem, and other dry-land grasses, on open rolling prairie well covered with grass, weeds, etc., and fully two miles from any body of water. It was on the west side of a small knoll on rather high ground and was built in an inconspicuous spot. No evidence of it could be seen fifteen paces away.

The nest was a rather deep depression in the ground sparingly lined with fine weed stems, grasses and a few bits of manure and one or two small feathers.

Fig. 55. YOUNG KILLDEERS JUST OUT OF EGG

The tops of the eggs were about flush with the surface of the ground. The eggs were *not all* arranged with the points turned in toward the center. When the nest was first found the bird flushed at a distance of about fifteen yards, and its cries as it rose in the air brought three other birds within a few minutes. At no time did the birds come anywhere near us, and as soon as we left the nest they flew back to it from a point about a quarter mile distant. On the second visit the parent left the nest when we were fully thirty yards away, and flew off close to the ground with short rapid wing-beats (similar to the flight of a Spotted Sandpiper) and lit about a hundred yards away. While flying it continually uttered a querulous musical whistle. Not long afterward, either this bird or the other parent flew up to a height of fully one hundred yards and circled about us two or

three hundred yards distant, occasionally giving this same whistle. Only once or twice did we hear the full Upland Plover "song".

On June 14, 1908, we located a pair of plover that undoubtedly had a nest not far from the shore of the lake, but several careful searches were unsuccessful. This pair of birds was most demonstrative on July 4 and 5. On July 11 their actions plainly indicated that young ones were near at hand.

Oxyechus vociferus. KILLDEER.

The first sound that greeted us in the morning and the last thing we heard at night was the dreary monotonous cry of the Killdeer, and even in the dead of night their notes were occasionally heard. The birds were encountered everywhere: on the lake shores, in the marshes and often back on the dry prairie.

They arrived about the middle of March (March 10, 1907, is my earliest

Fig. 56. KILLDEER AND FOUR EGGS BURIED BY BURYING BEETLES AFTER PARENT HAD DIED ON EGGS

date), and by the middle of April were abundant.

Quoting from my notes of April 26, 1907: "The Killdeer have evidently begun nesting as we did not see one-tenth as many around the lakes as we did last week (April 21); but they are common in isolated pairs farther back on dry land. We found two broken eggs on the lake shore and one on the dry prairie."

The earliest nest was found May 10, and the eggs hatched May 16. The bulk of the nests were found during the latter half of May, but nests with eggs were found throughout the month of June. One young of the year was seen July 28, which was unable to fly at that late date. Mr. Hersey was fortunate enough to see one set of eggs hatch. He says the parent birds carried every bit of shell away from the nest within two hours after the hatching. The birds' actions when about the nest were always confusing and we did not flush the parent from

the nest in a single instance. For the most part they remained at a distance calling loudly, and only in one instance did I see a parent simulate a broken wing to lure the intruder away from the nest.

We found one brood of four young which had just hatched and had not left the nest. They are beautiful little striped creatures, and become very quick and active almost as soon as they are dry. They run with surprising speed, and the note even of the tiniest chicks is the exact counterpart of the parent's note, on a smaller scale. The nests, if they could be called such, showed little variation except as to location, but we found them equally common in damp marshy locations (although in all such cases the nesting sites were perfectly dry) and out amid the cactus and rabbit brush of the dry prairie.

The parent of one nest which we had under observation died upon her nest and during the week between our visits, a colony of Burying Beetles buried eggs and parent until only the tip of the tail and one wing showed above the surface of the ground.

The birds began to gather in flocks the last week in July but did not depart for the south until late in October.

THE PRESENT AND FUTURE STATUS OF THE CALIFORNIA VALLEY QUAIL

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WITH MAP AND DIAGRAM

DURING the past year several circulars have been issued by the Bureau of Biological Survey of the United States Department of Agriculture calling attention to the fact that certain of our native birds, and especially the game birds, appear to be diminishing in numbers. In the annual report of the Chief of the Biological Survey for 1911 this statement is made: "The quail and prairie chicken are favorite and legitimate objects of pursuit by sportsmen, but they have been so ruthlessly pursued that they are now generally scarce and in many localities practically extinct."

With the present agitation in regard to the conservation of our national resources, it naturally follows that sportsmen as well as others are becoming deeply interested in the conservation of game. California has been so well supplied with game that she has been rather slow to wake up to the fact that she must needs look to the future in this regard. The past two decades have seen the practical extinction of such big game as the grizzly bear, elk, and prong-horn antelope. Sharp-tailed grouse have not been seen in the state for many years, and the grouse and sage-hen have been greatly reduced in numbers in many parts of the state.

In line with this rise of interest in game conservation has followed much discussion as to the present status of the California valley quail. The general opinion is that these birds have greatly decreased in numbers. It is the purpose of this paper to present what knowledge we have as to the present status of this quail in California, to discuss the factors governing the increase or

decrease of birds in general and of these birds in particular, and to offer, if possible, some suggestions as to ways and means of conserving this valuable game bird.

The sincere thanks of the writer are due Professor C. A. Kofoid, Professor J. C. Merriam, Professor W. E. Ritter, and Mr. Joseph Grinnell, of the University of California, for their helpful criticism and suggestions during the preparation of the present paper.

Three different species of quail are found within the confines of the State of California, the mountain quail (*Oreortyx picta*), the California valley quail (*Lophortyx californica*), and the Gambel or desert quail (*Lophortyx gambeli*). The first is distinctly a high mountain bird and is seldom found below 3000 feet elevation. The Gambel quail is known only in the southeastern part of the state, where it replaces the valley quail on the desert. The California valley quail is by far the most abundant of the species. Three geographical races, or sub-species of this species, varying slightly in color, are recognized. As these races do not differ in habits they are not distinguished in this paper.

It is always a difficult matter to obtain any adequate idea of the numbers of any species of bird because, as a rule, little reliance can be placed on the opinions of different observers. What might seem a large number to one observer might seem a very small number to another. In order that some idea of the numbers of quail at the present time, compared with the numbers of several years ago, might be obtained, the Fish and Game Commission sent out lists of questions to its deputies throughout the state. By plotting the reports of the deputies on the map of the state, it is easily seen that the two places where there is a consensus of opinion that quail have decreased, are southern California and the upper part of the San Joaquin Valley. (See map, fig. 57.)

The reason for the decrease in these particular localities can easily be traced to the hunter. Southern California is well populated and has at least a due proportion of hunters, as is shown by the sale of hunting licenses, over 12,500 being sold in 1910. The hunting grounds easily accessible from the bay cities naturally show a decrease also. The intensive cultivation in these same localities causes a destruction of food and cover, essential to the maintenance of quail. The answers also show that whereas in some localities there has been a decided decrease, in other localities the birds have either held their own or have increased. Since many of the deputies have only been acquainted with their particular locality for ten years, the records, in most cases, give an idea of the status for this length of time only.

When descriptions of the numbers of quail existing twenty years ago are compared with present conditions, it must be admitted that there are many less quail at the present time. Mr. T. S. Van Dyke, writing in *Outing* in 1890, says: "The statement may seem extravagant, but for many years it was a simple matter for a good shot to bag 200 in a day, all at single shots on the wing. For several years market shooters shipped an average of 10,000 apiece for the season. This hoggish work, with the number crippled and finally killed, has greatly reduced their numbers."

Mr. C. H. Shinn, writing in the same year, in giving the records of two hunters at San Diego, says: "In eighteen consecutive hunts the smallest bag consisted of forty-seven quail and five rabbits; one of the largest bags comprised 187 quail, 8 doves, and 1 rabbit, and no less than six bags ran far above a

hundred quail. A Coronado gentleman shot on the wing twelve dozen quail, and a friend with him, six dozen. The best bag that this first gentleman has made in San Diego County consisted of twenty-two dozen. They go in flocks

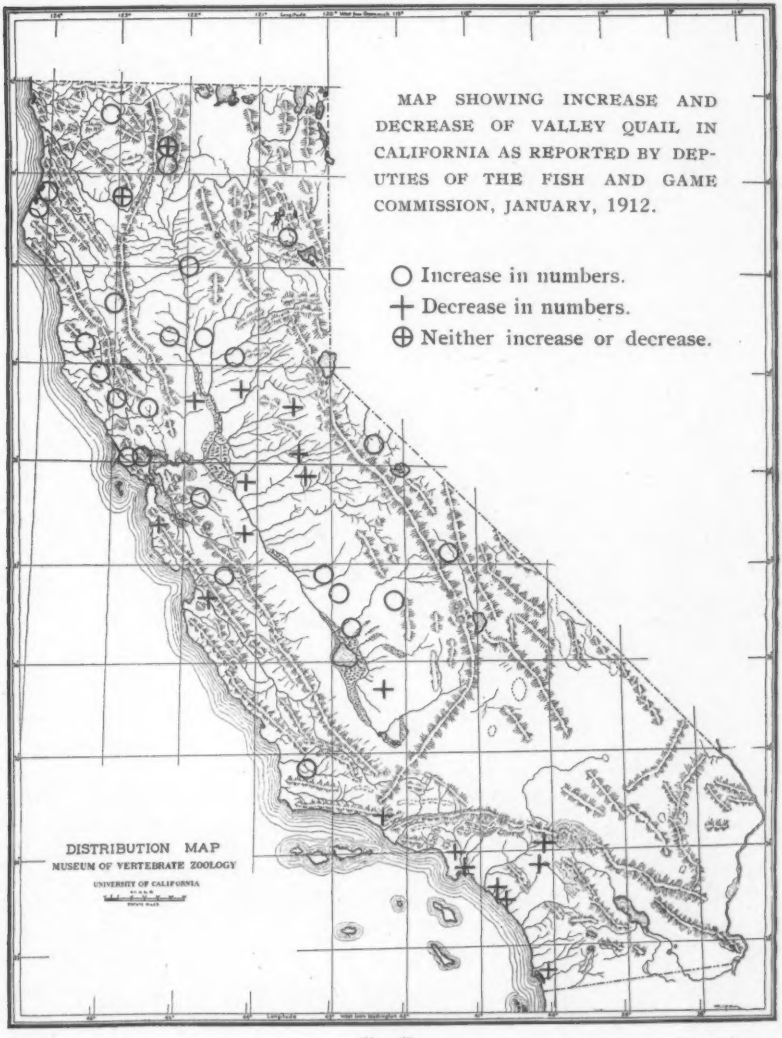

Fig. 57

of 50 to 800 and when a sportsman has studied the lay of the ground and knows the habits of the bird, he can invariably follow up the same flock with little trouble, until he has flushed and shot the greater number. There is no

danger of exterminating the quail on these dry ridges, where there is so much prickly pear cactus, in which they take refuge; and as long as the breeding season is protected no diminution in the autumn and winter quail shooting will ever be observed. I find that even on the valley farms of Alameda County the quail breed in the willows, and flocks of from 50 to 100 maintain themselves in many of the orchards, and have done so ever since the occupation of the region by Americans, though, of course, shot down to a mere handful each winter."

In his report on the "Birds of the Death Valley Expedition," Fisher says of the valley quail: "Throughout the San Joaquin Valley Mr. Nelson found it common about ranches, along water courses, or near springs. It was especially abundant at some of the springs in the hills about the Temploa Mountains and Carrizo Plain. In the week following the expiration of the closed season two men, pot-hunting for the market, were reported to have killed 8400 quail at a solitary spring in the Temploa Mountains. The men built a brush blind near the spring, which was the only water within a distance of twenty miles, and as evening approached, the quail came to it by thousands. One of Mr. Nelson's informants who saw the birds at this place, stated that the ground all about the water was covered by a compact body of quails so that the hunters mowed them down by the score at every discharge." This was in 1893. Last summer and in April of this year parties from the Museum of Vertebrate Zoology of the University of California visited the same general locality, reporting that either none or but very few were to be seen at the watering places.

These quotations give a fair idea of the point of view of competent men twenty years ago. It is needless to call attention to the fact that in the very places mentioned by these men, conditions have changed and that quail are not nearly as numerous as they were twenty years ago. In many places in the state, nevertheless, where there is little intensive cultivation, the protection afforded them the past few years has allowed them to hold their own and in some places to increase.

Having now pointed out the fact that quail have greatly decreased in numbers in some parts of the state and have apparently increased in numbers in other parts, let us pass on to a discussion of the factors governing the increase and decrease of birds in general and of quail in particular. Professor S. A. Forbes was one of the first to point out the importance of studying the natural order as a whole, and understanding the disturbances to which it is subject. In a paper entitled "On Some Interactions of Organisms," he says: "While the natural order is directed to the mere maintenance of the species, the necessities of man usually require much more. They require that the plant or animal should be urged to superfluous growth and increase, and that all the surplus, variously and widely distributed in nature, should now be appropriated to the supply of human wants. From the consequent human interferences with the established order of things numerous disturbances arise,—many of them full of danger, others fruitful of positive evil. To avoid or mitigate the evils likely to arise, and to adapt the life of his region more exactly to his purposes, man must study the natural order as a whole and must understand the disturbances to which it has been subject. Especially he must know the forces which tend to the reduction of these disturbances and those which tend to perpetuate or aggravate them, in order that he may reinforce the first and divert the second."

There are at least six factors that have a direct influence on the numbers of any species of animal, the importance of each varying greatly according to

locality. They are as follows: Food supply, cover, predatory animals and birds, disease, weather conditions, and the hunter.

There is an old biological law which states that birds and animals under natural conditions will increase up to the limit of their food supply. On any given area there is food and protection for a certain population of plant and animal life. Just as soon, therefore, as the food or protection or both are diminished the given area will support less numbers of individuals and vice versa. This law is one of the most fundamental of all natural laws and most of the fluctuations of numbers of a given species can be traced either directly or indirectly to the working out of this law. Such factors as disease, predatory animals and birds, and climatic conditions are usually minor external factors. If it can be shown, then, that the food supply or cover of the California valley quail has greatly decreased in the last twenty years, we should naturally expect a decrease in the numbers of quail. If, on the other hand, it can be shown that the food supply and cover, or both, has not decreased, or has increased, we should naturally expect to find the quail holding their own or increasing in numbers; that is, barring other factors such as disease, an increase of predatory mammals and birds, or hunting. Outside disturbances in the balance, such as the hunter, may or may not have a decided influence on numbers, depending upon the extent of the destruction. A certain small amount of destruction probably would have little or no effect on the numbers, as this depletion would simply leave more room for others and a larger percent of the birds hatched would live.

Under natural conditions, therefore, the food supply of a bird probably has more to do with the numbers than any other thing. The cultivation of land, which is becoming more and more general each year, causes the destruction of the natural food of many of our birds. In a few instances certain birds are profiting by a new supply of food furnished by the crops raised; but in most instances the intensive cultivation of land brings a diminution in the numbers of birds very largely due to a destruction of their natural food. It is pleasing to note that the quail are among the birds which have, to some extent at least, adapted themselves to the new conditions. It has been stated that no birds flourish under so many varied conditions as do the California valley quail; for they can be found from sea level to a mile above the sea, and from the humid coast belt to the desert. They have been found breeding in tules, in vineyards, in the weeds along fences, in orchards, and even in suburban gardens. Vineyards furnish them not only acceptable food but good cover. The quail being largely a seed eater, will turn to grain, grapes, and other cultivated products when its natural food is not available. In spite of this fact, however, the cultivation of great tracts of wild land accompanied with the destruction of such plants as the burr clover, alfilaria, lupine, tarweed, pigweed, and mustard, has diminished the food supply of the quail to such an extent that doubtless it has had a considerable effect on the numbers.

The habits of the quail show them to be closely dependent on cover. There are many places in the state where it could be definitely shown that the destruction of cover has been the primary factor in the diminishing of the numbers of quail. Not only is that cover, destroyed in the clearing of land, of importance, but also the large areas destroyed by fire each year. As the land becomes cultivated, but a small amount of cover is furnished in place of that destroyed. The weeds and shrubs growing along the fences, and the vineyards, probably furnish the best of the new cover.

In some parts of the state the pasturing of sheep is having a direct influence on the quail. Belding, in his "Birds of the Pacific District," written in 1890, speaks of the valley quail as follows: "Rather rare at Red Bluff where much of the country is used for pasturing sheep. Formerly very aboundant in the Marysville Buttes but now rare for the same reason. Not only do sheep destroy nests by treading on them, but they prevent the growth of cover, and this timid bird deserts her nest where there is the least cause for so doing." The pasturing of cattle is doubtless a menace to quail in many parts of the state also.

A certain number of quail are claimed each year by predatory mammals and birds. The wildcat, coyote, fox, and skunk are probably the worst offenders among the mammals, and the Cooper, sharp-shinned, and duck hawks, the worst among the predatory birds. The blue jays, the roadrunner, and the gopher snake are reputed to destroy eggs and young. Under natural conditions these predatory mammals and birds were far more numerous than they are at present so that they cannot be considered a very serious factor in the decrease. It seems reasonable to believe that the slaughter of these mammals and birds has kept up with the destruction of the quail so that there is certainly no larger a toll now than formerly. In fact, there is probably a less toll taken by predacious mammals and birds at the present.

Quail appear to be little subject to disease. As far as can be ascertained there is no reference in literature to an epidemic appearing among California valley quail. Certain parasites are not uncommon in these birds, however. Mr. Joseph Mailliard gives his experience with parasites in valley quail in the following words: "In Marin County and, if my memory is correct, in San Benito County also, these birds are frequently found with what appear to be small tapeworms, or with numbers of round, rather blunt worms about half an inch long closely resembling those sometimes found in domestic poultry. Besides I have often found a group of exceedingly small parasites of a bright vermillion color, suggesting fungoid growth, around the vent, but have never examined these with a microscope." Chas. S. Thompson has also called attention to the fact that he has found tapeworms in quail. He says: "At least one-third had tapeworms two and one-half to four inches long in the intestines." The presence of such intestinal parasites is not as a rule very detrimental to the health of the animal, practically all mammals and birds and even man being attacked to a greater or less degree.

In 1906-7 large numbers of bobwhite quail kept in captivity died with what was called quail disease, a disease singularly like the grouse disease of England. At that time post-mortem examination showed the presence of quail disease in the common bobwhite, the California quail, the Gambel quail, the scaled quail, the mountain quail, and the sharp-tailed grouse. The prominent symptoms were first dullness, and then emaciation. Only birds kept in confinement were found infected.

Bobwhite quail kept in captivity have been found infected with coccidiosis, a disease which sometimes attacks poultry. This disease seems to be a common one among birds, for it has been found in grouse, pheasants, pigeons, and is quite a common disease among domestic fowls, especially turkeys here in California. The Committee on Grouse Disease in England, in an elaborate report this past year, shows that one of the diseases which has destroyed such large numbers of grouse in England and Scotland is coccidiosis. Another disease

caused by threadworms (Nematodes), called strongylosis, has also been instrumental in destroying large numbers of these birds. Coccidiosis is a serious disease, the birds attacked by it usually dying from the effects. Whether California valley quail under natural conditions have ever been known to contract the disease I have not been able to ascertain. Such a protozoan disease as this, if it should attack our quail, would doubtless prove a serious menace; but fortunately there seems to be no immediate danger. At the present time, therefore, disease cannot be considered an important factor.

Weather conditions perhaps have more effect on birds which nest on the ground and on birds with the habits of the quail than on other birds. T. S. Van Dyke says on this point: "Extreme drouth is the only natural thing that reduces them. They increase enough to supply the hawks, foxes, wild cats, and owls, and can stand even a reasonable amount of shooting. But when the winter rains fail to make seed enough for its ravenous appetite, this quail knows well before too late. It then declines to mate and remains all summer in the big armies of the preceding year." That quail are able to foretell weather conditions and shortage of food is doubtful; but the fact that quail sometimes remain in flocks during the breeding season has been noted by other observers. Even here we see that the weather conditions are only concerned because they effect food supply.

Inbreeding is sometimes put forth as a reason for decrease, but it can hardly be substantiated by fact. Chickens are often known to inbreed for long periods of time without any apparent diminution in vitality or productiveness. Besides, the quail wander over large enough areas so that there is little danger of effective inbreeding. Then, too, there is no good reason why there should be very much more inbreeding now than there was twenty years ago when every one admitted that quail were in a thriving condition. The fact that quail, even in places where there were small numbers, have greatly increased under sufficient protection, seems in a measure to disprove this theory. Quail being nonmigratory, isolation caused by the cultivation of large tracts of land would bring about favorable conditions for inbreeding. The extent to which such isolation could be brought about by intensive cultivation is problematical. The question awaits future development, and so further consideration at this time is not pertinent.

Last, but not least, comes hunting as a factor in the increase or decrease of birds. In many places this has been the most important factor in causing a decrease in numbers. With the increased traveling facilities, and the increased efficiency of firearms, this aspect of the question is yearly becoming more and more important. Twenty years ago hunting involved not only considerable time but considerable inconvenience; today, with the automobile and the increased transportation facilities, a hunt involves but little time and almost no inconvenience. The comparative destruction possible with a muzzle-loader or even with a single-barreled breech-loading shotgun, and an automatic, brings forcibly to mind one of the causes for the decrease in game birds during the last few years. Shooting from automobiles, a practice of the present day, is an easy way of filling the game bag but is a dangerous practice when viewed from the standpoint of conservation. Most game birds, on account of their prolificness, can withstand a certain amount of shooting; but the wholesale slaughter, now made possible by improved methods, undoubtedly oversteps the danger point.

The geometrical ratio of reproduction of plants and animals is large enough to necessitate an increase in numbers were it not for adverse circumstances. For example: The female of each pair of quail, judging from records, lays an average of twelve to fifteen eggs. Various dangers, however, probably prevent the hatching of more than an average of ten young. If all of these young should survive and reproduce, at the end of the second year there would be 132 quail for every original pair. But we know that this is not the case, but that there is usually about the same number each year. This means that the death rate must equal the birth rate, and, in the case of the California valley quail, the death rate must be some five times as great as the normal minimum population. Or, in other words, the life rate, or rate of survival, must be only 2 out of every 130 quail.

Taking a covey of 100 quail, probably at least 40 of that number would

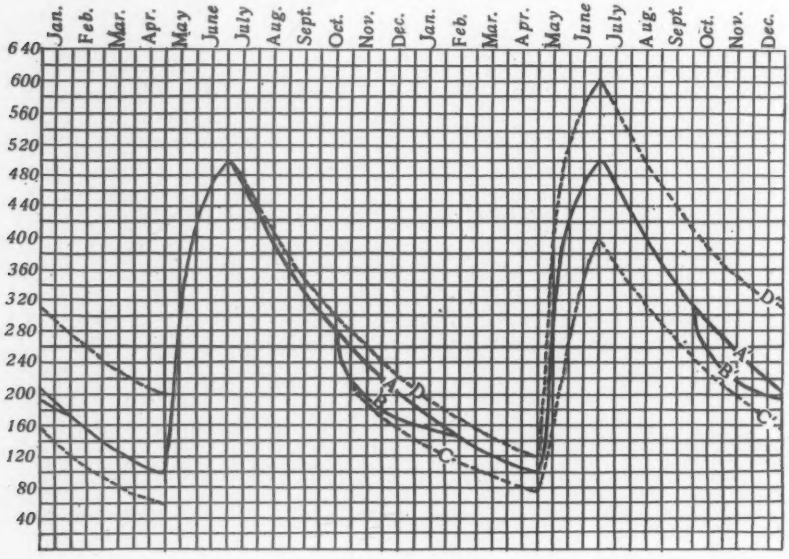

Fig. 58

average a brood of ten young each year. This would mean that just after the hatching season, there would be something like 500 quail where there had been 100. At the opening of the next breeding season this covey, under natural conditions, would have been reduced to the 100 again. Evidently therefore, there would have been a mortality of about 400. There are a great many factors to account for this immense mortality, chief among them being, under natural conditions, lack of food supply and destruction by predatory mammals and birds.

If we make a hypothetical curve, the points to be brought out are made intelligible. If along the left-hand side of the graph are plotted the numbers of individuals, and along the bottom, the months of the year, the maximum and minimum numbers would form a curve such as is seen in A. The minimum numbers can reasonably be expected to exist just before the eggs are hatched,

say early in May. Let this minimum number be represented by 100. By the end of June, just after the hatching season, the maximum numbers would naturally be found. From this time on there is to be expected a decrease in numbers until the minimum of 100 is again reached. The weaker members of the flock will be killed first, and those which can survive till the later part of the winter have then a far better chance of surviving till the breeding season. Hence, the curve drops quickly until February is reached, thus showing a greater mortality during the fall months. At the end of hatching, if forty percent produced an average of ten young, we find the numbers of quail increased from 100 to 500. At the beginning of the hatching season the next year, however, this number has again been reduced to the minimum number of 100. It can be seen then, that, under natural conditions, we are to expect, with a covey of 100 quail, that nearly 400 could be destroyed each year and yet equilibrium would be maintained and the birds would not decrease in numbers.

Suppose that we introduce a new element, shooting. A certain number of birds would still be claimed by the natural forces at work; but if the shooting occurred during the open season, October 15 to February 15, a certain proportion of the birds shot would be birds which would later have died from other causes, and just so long as that particular percentage was not greater than the death rate for that period of time there would be no decrease in numbers (curve B).

Of course a certain number of those vigorous birds destined to survive and breed would be claimed by the hunter. Under proper regulations these might be but a small percent, however, and even the killing of these might make the struggle for existence of less vigorous individuals so much less that their chances of surviving would become greater. Let the number shot bring down the numbers of birds to 75 instead of 100 at the time of minimum numbers, however, and a decrease would necessarily follow in the next year's crop of young (curve C). It seems probable, moreover, that with the hunter, just as with predaceous animals, the least vigorous prey is most easily obtained; so that no selective deterioration of the quail stock can be attributed to the hunter.

The dotted line C on the graph represents the conditions to be expected from an excessive amount of shooting. If the death rate could be lessened, the condition represented by D would exist, that is, there would be an increase in the numbers of quail. Such an increase could not exist for long, however, for the struggle for existence would also be increased to such an extent that a norm would soon be established. This same type of reasoning has been applied to nearly all forms of life and has been found to hold true.

Summing up, then, we can say that *a certain amount* of shooting might in no way effect the numbers of quail; for in the shooting we might be simply making use of numbers of quail that would have perished in some other way. It should be kept in mind, however, that there is a danger point and that when the number killed approaches near to or exceeds the normal death rate, there must follow a decrease. Another point to be remembered is that this reasoning applies to ideal conditions and does not mean that 400 out of every 500 quail can be killed each year. In shooting, many birds are killed that would have survived till the breeding season; and herein lies an error in the computation that must be taken into account. Probably the number that it would be safe to kill would be very far under the 400 mark; but even then the number might be large enough to allow considerable hunting. It is safe to say that quail can withstand a certain amount of shooting without showing a decrease in mini-

mum numbers, the exact amount being dependent largely on the death rate and consequently on the locality. The great danger of exterminating the quail by hunting lies in the excessive amount of shooting which is seen in certain parts of the state brought about by the use of improved firearms and the augmented number of sportsmen.

As can be seen by studying the graph, the open season should come during the winter months,—after the young have become full grown, and at the time when the natural mortality is large. A lengthening of the season to include too many of the late winter months would result in the destruction of those birds most necessary for the retention of normal numbers. Fall shooting would allow the killing of half-grown birds. Winter shooting, *if kept within bounds,* will permit the quail not only to hold their own but to increase. The months of November and December seem best fitted for the open season. A shortening of the season to these two months would doubtless improve conditions in many localities.

The present bag limit may be too large in some parts of the state, especially in those parts where the quail are known to be on the decrease. The closing of the season for a few years, or the creation of a weekly bag limit, might be sufficient to improve the status of the quail in these particular localities. Shortening the season too much only concentrates the shooting and seldom improves conditions. The creation of a weekly bag limit, or the closing of the season for a brief period of years would effectively cut down the toll taken by the hunter. Where there is a marked depletion in numbers the closing of the open season seems the most sensible way of meeting the situation.

The suggestion that new blood is needed is hardly borne out by the facts already brought out. Our native stock is apparently in good health and only depleted in numbers.

A study of local conditions affording a knowledge of the death rate seems the most scientific way of dealing with the problem, and this method will doubtless be the method used in the future. When the amount of shooting is regulated by the natural death rate there will be no diminution in numbers of the California valley quail on account of the hunter. It should be remembered that the hunter is probably one of the most important of many factors governing numbers, and that the only way to quickly increase numbers is to cut down the toll claimed by the hunter.

SUMMARY

California valley quail have been greatly reduced in numbers in some parts of the state. In other parts these birds have increasd in numbers during the last ten years, whereas in still other parts their numbers have neither decreased or increased.

Many factors govern the increase or decrease of birds, chief of which are: Food supply, cover, predatory mammals and birds, disease, and the hunter.

Food supply is probably, in the last analysis, the most important of the factors governing numbers under natural conditions, for it is a well-recognized fact that both animals and plants will increase up to the limit of their food supply.

Predatory mammals and birds act as a check on the numbers of quail and

their destruction allows of an increase, but this factor having conditioned the quail population for so long a time is of less consequence than other factors.

As there are no records of an epidemic of disease among California valley quail, there seems to be little immediate danger from this direction. "Quail disease" and "coccidiosis," well-known diseases of other members of the quail family, present a grave danger, however. A knowledge of the extent to which valley quail are immune to these diseases would throw valuable light on this subject.

The average hunter, although almost a negligible quantity twenty years ago, on account of the improved facilities for transportation and the improved firearms, has become a very important factor. A study of the laws of nature governing the numbers of quail shows that this bird might be able to withstand a small amount of destruction during the winter open season without danger of impairing the average numbers from year to year. It is when the destruction during the year nearly equals or exceeds the annual crop, thereby destroying the productive brood stock for another year, that the danger point is reached. A regulation of the amount of shooting based on the scientific determination of the normal death rate of the young and adults will eliminate all danger of the extermination of this bird by the hunter. A serious danger also, doubtless lies in the modification and destruction of the food and cover of this bird contingent upon the settlement of the country.

The present status of the California valley quail calls for conservative action governed by a knowledge of those factors causing a disturbance of the balance. In other words, strengthen those factors which cause an increase in numbers and weaken or destroy those factors which cause a decrease in numbers, and the quail will become subservient to our interests. The furnishing of plenty of food and cover, either by artificial feeding and planting, or by game preserves, the destruction of predatory mammals and birds, prevention of disease, and careful regulation of the amount of hunting to permit of the survival of a sufficient number of the productive brood stock to insure an undiminished annual crop, are factors within our control and on these depend the future of the California valley quail.

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A JOURNEY TO THE STAR LAKE COUNTRY AND OTHER NOTES FROM THE TAHOE REGION

By MILTON S. RAY

WITH THREE PHOTOS

THE spring of 1910 at Lake Tahoe was remarkable for being one of the earliest known to old settlers. At a time when usually grass in the meadows is just springing up and willows and aspens budding out, the meadow grass then (May 20) was already fast becoming dry, the willows and aspens were fully leaved, the roads were dusty and the weather sultry, giving one the impression of late June. Thus, when I encountered young-of-the-year Juncos on the day after my arrival (May 21) I was not greatly surprised; but I soon learned that the earliness of the season had not affected all species equally, and this, with the usual wide variation in Sierran nesting dates, made the effect of the early spring much less marked than it would have been otherwise.

My first day afield resulted in finding some very strange-looking eggs of the Redwing Blackbird (*Agelaius phoeniceus*, subsp?). Instead of the usual blackish scrawls about the larger ends these specimens are mottled, in some cases over the entire surface, with various shades of brown and pale purplish, which I hope to describe and illustrate more fully in some future paper. Among other finds were two nests of the Sierra Junco (*Junco hyemalis thurberi*), each with four fresh eggs. One of the nests was placed beneath a log in a

swampy meadow and was located by the bird dislodging one of the eggs in leaving, which rolled out on the meadow grass unbroken. A hard climb forty feet up an aspen showed a nest of the Cabanis Woodpecker (*Dryobates villosus hyloscopus*) to contain four very small young. This is the earliest nesting woodpecker of the region.

May 22 a tramp was taken to Cave Rock and return by the lake beach. Killdeers (*Aegialitis vociferus*) and Spotted Sandpipers (*Actitis macularius*) were common most of the way, and a nest of the former was noted, a slight hollow in the sand lined with pebbles and bits of driftwood, with four eggs well along in incubation. A nest of the Blue-fronted Jay (*Cyanocitta stelleri frontalis*) in a Jeffrey pine sixteen feet up, was found to hold three near fresh eggs, while not far distant in the cavity of an old stump 27 inches above the ground and lined with grasses, bark strips and feathers, was the large complement of eight eggs of the Mountain Bluebird (*Sialia currucoides*). Six of these appeared well incubated and two addled.

Fig. 59. STAR LAKE AT THE FOOT OF JOB'S SISTER, IN LATE JUNE; ELEVATION NEARLY 9000 FEET
Photo by Oluf J. Heinemann

The following day was devoted to work at the Rowlands Marsh, where the customary colonies of the Redwings (*Agelaius phoeniceus*, subsp?), Brewer Blackbird (*Euphagus cyanocephalus*), Yellow-headed Blackbird (*Xanthocephalus*) and Black Tern (*Hydrochelidon nigra surinamensis*) were found nesting. The only noteworthy finds were two nests of the Canada Goose (*Branta canadensis canadensis*) described in a previous CONDOR, and a nest of the Mountain Song Sparrow (*Melospiza melodia montana*) at the foot of a small willow with five young. On May 24 a fully-fledged Western Robin (*Planesticus migratorius propinquus*) was noted, which is the earliest record I have for Lake Valley. Although many bird homes were located during the next two days it was not until the 27th that I made a noteworthy find. This, a nest of the Sierra Hermit Thrush (*Hylocichla guttata sequoiensis*), was found on the floor of the valley in a lodge-pole pine sapling and made of moss, grasses and stems and lined with fine grasses. It held four eggs, slightly incubated. Another nest of more than passing interest was one of the Mountain Song Sparrow (*Melospiza melodia montana*) placed in a lodge-pole pine eleven feet up, with

three practically fresh eggs which were collected with the parent and which Joseph Grinnell pronounced typical *montana*.

On May 29 I took the first recorded eggs (a set of six) for Lake Valley of the Parkman Wren (*Troglodytes aedon parkmani*) with parent. The nest was first found on May 21 and was placed in a dead aspen 71 inches up. The cavity was extremely small and allowed very little opportunity for that extensive nest-building so dear to the heart of *parkmani;* in fact it had only a warm lining of feathers. In a hole in an adjoining aspen, twenty feet up, was a nest of the Red-shafted Flicker (*Colaptes cafer collaris*) with large young.

The Sierra Junco shows a decided preference for the margin of meadow lands and often selects situations where the nests become water-soaked and the

Fig. 60. NEST AND EGGS OF SIERRA HERMIT THRUSH IN LODGE-POLE PINE

eggs fail to incubate. One nest of this kind I found on May 30. Although the eggs were lying in water the parent remained incubating. This day proved one of continuous surprises and I felt well repaid for the long trip into new territory. The first thrills were two nests of the White-crowned Sparrow (*Zonotrichia leucophrys leucophrys*). One was placed on the ground at the foot of a small willow, along a brook. The nest was flush with the surface and made of grasses lined with red cow-hair with which the green-brown eggs prettily contrasted. The eggs were three in number and almost fresh. The flushing of the sitting bird led to the discovery of the nest.

The second nest was along the same stream four feet up in a lodge-pole

pine sapling, well concealed in a thick bunch of foliage and composed almost entirely of lodge-pole pine needles and lined with fine grasses and horsehair. This nest held four fresh eggs. Not far away the home of a Sierra Hermit Thrush was noted four feet up in a lodge-pole sapling with a set of three eggs. The nest was of rootlets, grasses and stems and lined with fine, light-colored grasses. I was interested, too, in a nest of the Western Bluebird (*Sialia mexicana occidentalis*) which is far less abundant here than *currucoides*. This nest, in a dead tree trunk eight feet up, was warmly lined with woolly substances, bark strips, grasses and stems and held five eggs in which incubation had just begun. The main feature, however, of the day's work was a dainty nest of the Ruby-crowned Kinglet (*Regulus calendula calendula*) with nine partly incubated eggs. The nest, although only nine feet up, in a small lodge-pole, was not particularly easy of access as it stood in several feet of water while a swift-running stream of icy water intervened. The pair regarded my intrusion with high disfavor, particularly the lady of the house, who scolded continually while I remained in the vicinity. Nearing Rowlands on the homeward journey a curious nesting site of the Brewer Blackbird (*Euphagus cyanocephalus*) was noted, the nest being placed on the edge of a grassy meadow beneath a board. It was less bulky than the tree-built structures and made of rootlets, grasses and stems, and lined with horse-hair.

On May 31 a nest of the Sora (*Porzana carolina*) was found at Rowlands with the large complement of 13 eggs. Many deserted nests of the Yellow-headed Blackbird with eggs were noted, the slender reeds not being sufficiently strong and bending over with the weight into the water. Many nests of the Black Tern were observed, none containing more than three eggs.

June 2 was a record day for finding nests of the Sierra Junco, two of three and two of four eggs being found. One was built in a slanting hole in the ground, arched over by pine needles, and would have defied detection had not the parent fluttered off at my approach; while another was well hidden beneath the broad leaves of a wild sunflower.

On the 3rd of June Mr. Henry W. Carriger arrived, but the only result of a strenuous half-day of joint field work was the taking of a nest of the California Yellow Warbler (*Dendroica aestiva brewsteri*) which I had located previously. This held four fresh eggs and was prettily woven to the branch of a lodge-pole pine sapling six feet up. On the following morning Mr. Carriger and I trudged some distance with a long ladder to a spot where I had observed a pair of Ruby-crowned Kinglets nest-building in one of those long, stringy, matted and twisted clumps of foliage peculiar to some lodge-pole pines. The nest was hung much like an oriole's, and after considerable manipulation we were rewarded by seeing seven eggs lying in the feathery bed of the dainty, broad-brimmed, mossy basket. Mr. Carriger found his first nest of the Wilson Phalarope (*Steganopus tricolor*) the following morning at Rowland's Marsh. The entry in his note book reads: "Four eggs; incubation one-third; nest, a small affair of marsh grass on ground in wet portion of marsh."

On June 5 Carriger and I started early on one of the most important excursions of the season, a visit to the Star Lake Country. This lake, nestling at the foot of a rugged and lofty peak called Job's Sister, has an altitude of nearly 9000 feet and the surrounding region is rich in birdlife of the Canadian and Hudsonian zones. Mr Carriger and I confined our work principally to the broad Cold Creek Meadows which we reached about noon. En route the only

find of importance was a nest of the White-crowned Sparrow, with four eggs advanced in incubation. It was placed 28 inches up in a lodge-pole pine sapling, and made of weed stems and lined with fine grasses and horsehair.

The most important find on the meadow was a nest of the Cassin Purple Finch (*Carpadacus cassini*) with three eggs in a state of advanced incubation. The nest was placed on almost the top branch of a pine, about thirty feet up, on the edge of the meadow. It was of particular interest as nests of *cassini* are not often located or easy to reach, and the birds being also quick to desert and the nesting season a long one make it difficult to obtain a proper set of eggs. Although I have spent a number of summers at Lake Tahoe *cassini*, oologically, is still unrepresented in my cabinet, and when Carriger called from the tree-top that the nest held three well-incubated eggs I felt that another Tahoean oological mile post had been passed. Carriger also examined two nests of the Audubon

Fig. 61. COLD CREEK MEADOWS IN LATE JUNE; ELEVATION 7500 FEET; FREEL'S PEAK AND JOB'S SISTER IN BACKGROUND

Warbler (*Dendroica auduboni auduboni*), each with four fresh eggs, and two of the Sierra Junco, each with five fresh.

In a lodge-pole pine twenty feet up, placed on the end of the bough, I found another nest of the Cassin Purple Finch with four fully-fledged young. Not to mention numerous nests of the Western Robin and Western Chipping Sparrow, the only other of note I found was one of the Audubon Warbler with four fresh eggs.

On June 6 I noted two very early nests for this elevation of the House Finch (*Carpodacus mexicanus frontalis*) placed in lodge-pole pines twelve and fifteen feet up, both with five fresh eggs. Later in the day I found four eggs, incubation advanced, of the White-crowned Sparrow, and four eggs, fresh, of the Sierra Hermit Thrush. A nest of the Western Chipping Sparrow (*Spizella socialis arizonae*) was collected with a set of four eggs one of which was an infertile runt measuring only .55x.43; the others were normal averaging .71x.53.

A nest presumably of the Pintail Duck (*Dafila acuta*), which I had previously found, was also revisited as I desired to show it to Mr. Carriger. On reaching the nest, however, we found it deserted and the six eggs emptied of their contents, scattered about on the grass. Mr. Carriger located his first nest of the Ruby-crowned Kinglet today in a lodge-pole pine. Examination showed it to hold seven fresh eggs. Nearby one of the Yellow Warbler was noted placed in the dead portion of a willow without any attempt at concealment and yet for this very reason more liable perhaps to be overlooked, as nests of the Western Robin and Western Wood Pewee often are, which are built in dead or burnt trees.

Three nests of the White-crowned Sparrow, all on the ground in meadow land, were noted on June 7, one with four small young, one with one and one with four eggs, fresh. In a dead pine Carriger excavated a nest of the Pygmy Nuthatch (*Sitta pygmaea pygmaea*) with small young, while a nest each of the Williamson (*Sphyrapicus thyroideus*) and Sierra Sapsucker (*Sphyrapicus varius daggetti*) in dead portions of live lodge-pole pines were found in a like condition. We saw the first Gnatcatcher (*Polioptila*, sp.?) for the Lake Valley region today and were much disappointed in being unable to secure it.

As we intended leaving for the long tramp to Pyramid Peak the following morning we spent June 8 leisurely rowing along the lake shore east and southeast of Bijou. Many nests of the Tree Swallow (*Iridoprocne bicolor*) were noted in cavities in piles in deep water. Most nests contained either eggs or young varying from five to seven in number. The Tree Swallows were not the only species to take advantage of the protection afforded by water-bound nesting sites, for numerous nests of the Brewer Blackbird and one of the Mountain Bluebird were also noted. The most remarkable, however, were two of the Red-shafted Flicker, both with almost full-grown young, some of which in the excitement caused by our approach fluttered into the water. For a time Carriger and I were kept busy returning them to their protected and yet perilous dwelling place. The day's work closed early as we had to spend considerable time after reaching camp preparing for the long trip to Pyramid Peak, already recounted in a previous number of THE CONDOR.

THE PRESENT STATUS OF THE COLORADO CHECK-LIST OF BIRDS

By WELLS W. COOKE

THE appearance of "A History of the Birds of Colorado," by W. L. Sclater, reviewed in this number of THE CONDOR, marks an opportune time for presenting the status of the Colorado state list of birds in the light of the new records furnished by Sclater and accessions that have become known since the third supplement to the Birds of Colorado was published in the *Auk* for October, 1909.

The Sclater list of 1912 shows both additions and subtractions as compared with the Cooke list of 1909, as shown in the following table.

INCLUDED BY SCLATER (1912) AND NOT BY COOKE (1909).

Pelecanus occidentalis
Coccyzus americanus
Phalaenoptilus nuttalli nitidus
Chordeiles acutipennis texensis
Empidonax griseus
Empidonax trailli alnorum
Otocoris alpestris enthymia
Agelaius phoeniceus
Loxia curvirostra minor
Astragalinus psaltria arizonae
Astragalinus psaltria mexicanus
Protonotaria citrea
Dendroica virens

INCLUDED BY COOKE (1909) AND NOT BY SCLATER (1912).

Phalaropus fulicarius
Aegialitis meloda
Meleagris gallopavo silvestris
Phasianus torquatus
Buteo lineatus elegans
Otus asio
Sphyrapicus varius
Muscivora forficata
Otocoris alpestris praticola
Agelaius phoeniceus neutralis
Junco hyemalis montanus
Junco hyemalis oreganus
Junco hyemalis annectens
Vermivora celata lutescens
Geothlypis trichas
Planesticus migratorius

Pelecanus occidentalis. First recorded for Colorado by H. G. Smith (CONDOR XII, 1910, 133) from a specimen taken at Thomasville and now in the State Museum.

Coccyzus americanus. Included by Cooke in his original 'Birds of Colorado' on Bendire's record; later withdrawn by Cooke (Auk, XXVI, 1909, 412) as the evidence seemed insufficient. Now restored by Sclater based on a specimen taken by Aiken, June 4, 1898, at Ramah. This specimen has been sent to the Biological Survey and the identification confirmed by Oberholser. Sclater considers all of the yellow-billed cuckoos of Colorado east of the Rocky Mountains to belong to this form, while he is doubtful whether the western form, *occidentalis*, deserves a place in the list.

Three yellow-billed cuckoos lately sent to the Biological Survey for identification by L. J. Hersey include both forms, and queerly enough one taken in the mountains on Clear Creek, August 23, 1910, is *americanus*, while one taken on the plains at Barr, July 25, 1911, is *occidentalis*.

Phalaenoptilus nuttalli nitidus. Sclater follows the A. O. U. *Check-List* in considering this a valid form and entitled to a place in the Colorado list. Cooke included it originally, but dropped it as being only a color phase of *nuttalli*.

Chordeiles acutipennis texensis. This addition to the Colorado list was secured by Aiken, June 11, 1908, at Hoehne, near Trinidad.

Empidonax trailli alnorum. Added to the Colorado list by Sclater from a specimen taken May 27, 1905, by Aiken near Limon. The identification has since been confirmed by Oberholser. Since this form breeds in British Columbia and eastern Montana it is not strange that it should pass through eastern Colorado in migration.

Empidonax griseus. First recorded for Colorado by Ridgway (Birds N. and Mid. Am. IV, 1907, 571) from a specimen taken May 24, at Newcastle. Sclater adds the record of one taken by Aiken May 3, 1872, near Fountain. A specimen now in the Biological Survey was taken by Cary September 5, 1906, in the Escalente Hills of western Routt County.

Otocoris alpestris enthymia. Sclater follows Oberholser in recognizing this form and considering it a winter visitant to Colorado. This form has been rejected by the A. O. U. Committee.

Agelaius phoeniceus. Sclater recognizes two forms of red-winged black-

birds in Colorado, *phoeniceus* to include all the breeding birds of the State, and *fortis* to include migrants from the north that winter in Colorado. During the last few years large series of blackbirds have been collected in Colorado with a view of settling definitely the status of the several forms in the State. It may be considered as certain that the breeding bird of southwestern Colorado is *neutralis;* that the breeding bird of eastern Colorado is different from the breeding bird of the eastern Mississippi Valley and according to the present rulings of the A. O. U. Committee should bear the name of *fortis;* that most of the wintering birds of eastern Colorado are the same form as the birds breeding there, but that if the form *arctolegus* is recognized (as the present writer believes will eventually happen) it will have to be admitted to the Colorado list as a rare winter straggler.

Loxia curvirostra minor. Sclater considers the great bulk of the Colorado red crossbills as belonging to this form, but assigns the breeding birds of southwestern Colorado to *stricklandi* and records a pair taken May 22, 1874, in El Paso County as the same form. The male specimen mentioned by Sclater has been sent to the Biological Survey for examination and while the dimensions are well within the limits of *stricklandi,* they are also not outside the limits of the large Rocky Mountain form that has been separated as *bendirei,* but which is considered by the A. O. U. as included under *minor.* It seems best, then, to consider the pair mentioned by Sclater as large specimens of *minor,* which is the common resident bird of that part of Colorado.

The reference of the breeding birds of southwestern Colorado to *stricklandi* seems hardly warranted. No specimens are available to settle the matter one way or the other, but the fact that the breeding birds of the mountains of northern New Mexico are not *stricklandi* is a strong argument against the probable occurrence of this form as a breeder in Colorado.

Astragalinus psaltra arizonae.

Astragalinus psaltra mexicana.

Both these forms are still retained by Sclater though it has been conclusively proved that they are both color phases due to age. All Colorado Arkansas goldfinches are referable to one form *psaltria.*

Protonotaria citrea. Is admitted to the Colorado list by Sclater on the same evidence that was considered by Cooke as entirely unsatisfactory.

Dendroica virens. Added to the Colorado list by L. J. Hersey (Auk XXVIII, 1911, 490) who took a specimen at Barr near Denver, May 20, 1909.

Phalaropus fulicarius. Not included by Sclater though the record has been published (Auk, XXVI, 1909, 409) and the specimen is still in the collection of the Biological Survey.

Aegialitis meloda. Not included by Sclater though a specimen was taken by Dawson May 17, 1899, at Julesburg and the record published (Wilson Bulletin, VI, 1899, 50; Auk XXVI, 1909).

Meleagris gallopavo silvestris. Omitted by Sclater from the Colorado list, where it has held a place since included by Say in 1823. It is true that there is not now in any collection a specimen of the eastern turkey taken in Colorado, nor has a specimen ever been identified as such by a competent ornithologist. The only claim the form has, rests on the assumption that the birds of southeastern Colorado (where the species was very common a hundred years ago) must have been the same as the birds a little to the eastward in Kansas and Oklahoma. As the species is now supposed to be extinct in that part of Colorado it is probable that the matter never can be settled.

Phasianus torquatus. Admitted by Cooke in 1898 and omitted by Sclater in 1912. Sclater's action is correct as the bird was an introduced species,—though both Cooke and Sclater admit the English Sparrow to the State list.

Buteo lineatus elegans. Omitted by Sclater since it was based on a sight identification.

Otus asio asio. Omitted by Sclater. This species was admitted to the Colorado list on the strength of the statement by Snyder that he had once captured one in the mottled phase near Greeley. As dichromatism is not known in either of the screech owls that are resident in Colorado, a bird in the red phase would seem necessarily to be referred to *asio*. The lately ascertained fact that *maxwelliae* inhabits the plains to eastern Yuma County, while *aikeni* ranges east to the Kansas line (Holly, June 2, 1908), makes the probability much less that *asio* would ever occur in Colorado.

Sphyrapicus varius. Omitted by Sclater. There was a specimen in the Maxwell collection that was identified by Ridgway as the eastern form. At that time it was claimed that every specimen in the collection had been taken in Colorado, but it has since been learned that some of them were bought from outside collectors and it may well be that this particular specimen had been so obtained. All other records for the eastern form in Colorado are now known to be errors and Sclater is undoubtedly justified in dropping it from the list.

Muscivora forficata. Omitted by Sclater because it was based on a sight identification. The species is, however, so peculiar in shape and actions and was so distinctly seen by the observer that there cannot well be a mistake in the identification.

Otocoris alpestris praticola. Omitted by Sclater, though its claim to a place in the list is exactly the same as that of *enthymia* which is admitted.

Junco hyemalis oreganus. Omitted by Sclater, though the specimen was identified by Ridgway and the record has been published (Auk, XXV, 1908, 187; Auk XXVI, 1909, 417).

Junco hyemalis montanus.

Junco hyemalis annectens. Both omitted by Sclater on the ground that they are probably hybrids instead of geographical races. While the present writer frankly admits that the last word on the junco question has not yet been written and that this final judgment probably will be radically different from the treatment of the subject in the present edition of the A. O. U. *Check-List*, yet the tendency of the later discoveries in regard to breeding ranges is strongly against the theory of hybridization.

Vermivora celata lutescens. Omitted by Sclater who considers that all Colorado orange-crowned warblers should be included under the name *celata*. While probably all the breeding birds of the State are the same form, yet it would be strange if some of the more western breeding birds of *lutescens* did not pass through Colorado during migration. Indeed, specimens of such migrants have been so identified by Ridgway (Nidologist, III, 1896, 76). In this connection it is interesting to note that if Oberholser's name *orestera* is ever adopted for the breeding birds of the Rocky Mountains, it will still be necessary to retain *celata* in the Colorado list as a rare straggler based on a specimen taken September 18, 1910, at Boulder by N deW. Betts and identified at the Biological Survey.

Geothlypis trichas. Omitted by Sclater, and correctly, for the specimen on which Cooke's original record was based has since been examined at the Biological Survey and found to be *occidentalis*.

Planesticus migratorius. Omitted by Sclater, who considers all Colorado robins as *propinquus*. It is undoubtedly true that all the breeding robins of Colorado are this form, yet a specimen taken April 13, 1912, at Crook, Colorado, and sent to the Biological Survey, proves to be the eastern form, which, therefore, is to be retained in the State list (CONDOR, XIV, 1912, 154).

In addition to the species named above, there are several more new birds for Colorado that were not included in either list.

Anas rubripes. The black duck has had a curious history in Colorado ornithology. Originally entered in the list by Ridgway in 1874 based on a specimen taken by Aiken, its position was unquestioned until in 1900 Cooke hazarded the guess, on geographical grounds, that the Colorado birds would prove to be *Anas fulvigula maculosa*. A specimen taken November 6, 1907, near Loveland, and now in the Natural History Museum at Denver, is this form (Auk, XXVIII, 1911, 490). But, nevertheless, *Anas rubripes* must also be retained in the list, for as already recorded (Auk XXVII, 1910, 451), a black duck taken about November 13, 1904, at Loveland has been identified at the Biological Survey as *rubripes*.

Florida caerulea. One was taken September 14, 1910, by E. P. Walker at Montrose.

Ionornis martinica. One taken June 17, 1911, by W. F. Doertenbach at Florence.

Tryngites subruficollis. Taken at Barr August 25 and September 4, 1910, by L. J. Hersey (Auk, XXVIII, 1911, 490).

Calcarius lapponicus lapponicus. The original lists of Colorado birds contained this form, which was later changed to *Calcarius lapponicus alascensis*, which is the common bird of the state. It will be necessary now to restore *lapponicus* to the list, for a specimen of the eastern form was taken December 28, 1909, at Barr by L. J. Hersey, and has been identified by Oberholser (Condor, XIV, 1912, 108).

Telmatodytes palustris iliacus. As already recorded by Betts (Auk XXVIII, 1911, 118), a specimen of this form was taken October 10, 1910, at Boulder, and one taken at Skinner's, El Paso County, January 15, 1908, is considered by Oberholser to belong to this form.

Ixoreus naevius. The same observer has recorded (Auk XXVII, 1910, 218) a specimen seen at Boulder December 5, 1909.

Hylocichla guttata sequoiensis. A lot of hermit thrushes sent by L. J. Hersey to the Biological Survey for identification contain two specimens of this form taken at Granby October 7, and at Holly May 16, 1911. It is therefore added to the Colorado list as a rare migrant, both spring and fall (Condor XIV, 1912, 108).

SUMMARY

The Sclater (1912) list of Colorado birds contains 395 species. From the list are to be withdrawn as more or less doubtful seven species—*Phalacnoptilus nuttalli nitidus, Otocoris alpestris enthymia, Agelaius phoeniceus, Astragalinus psaltria arizonae, Astragalinus psaltria mexicanus, Loxia curvirostra stricklandi*, and *Protonotaria citrea*—leaving 388 species. To these are to be added fifteen species—*Anas rubripes, Florida caerulea, Ionornis martinica, Phalaropus fulicarius, Tryngites subruficollis, Aegialitis meloda, Otocoris alpestris praticola, Agelaius phoeniceus neutralis, Calcarius lapponicus lapponicus, Junco hyemalis oreganus, Junco hyemalis montanus, Telmatodytes palustris iliacus, Ixoreus*

naevius, Hylocichla guttata sequoiensis and *Planesticus migratorius.* This makes a Colorado list of 403 species about which there cannot be much question. There is still left a list of seven species about which opinions would differ as to whether or not they are entitled to a place in the list—*Meleagris gallopavo silvestris, Phalaenoptilus nuttalli nitidus, Muscivora forficata, Otocoris alpestris enthymia, Loxia curvirostra stricklandi, Junco hyemalis annectens, Protonotaria citrea.*

The breeding records of the Colorado birds have been given by Sclater a much-needed revision, with the result of dropping from the list of breeders several species that had been included by Cooke in his several lists.

Lophodytes cucullatus. Omitted by Sclater from the list of breeding birds, because, although seen several times in summer, there is no definite record of its nesting.

Strix occidentalis. Not considered by Sclater a breeding species, although it is not known to be migratory in any part of its range.

Phloeotomus pileatus abieticola. This non-migratory bird is placed in the general list, but not in the list of breeders. The Colorado list would probably have been improved had the species been omitted altogether.

Compsothlypis americana usneae. Sclater is undoubtedly justified in withdrawing this species from the Colorado breeding list, and the same remark applies to the cases of

Dendroica striata, Dendroica townsendi, and **Pelecanus erythrorhynchos.**

The reason for denying the latter species a place in the breeding list is not so clear as in the case of several other birds.

Marila affinis. Omitted by Sclater, though it has been recorded as nesting at Barr Lake (Condor XI, 1909, 112). In a recent letter Hersey says: "On two different years I have found nest and eggs of the Lesser Scaup at Barr."

Egretta candidissima. Sclater includes this in his list of breeders with a question mark, and under the heading of the distribution of the species he says that it breeds "throughout its range." The queer fact has lately come to light that many adult Snowy Herons migrate in the spring far north of the breeding range and remain there through the summer as non-breeders. The habit of northward migration in the fall is common among herons, but the Snowy Heron is unique among North American birds in its northward migration in spring of non-breeders. The Snowy Heron does not breed nearer to Colorado than Louisiana.

Grus mexicana. Omitted by Sclater from his list of breeding birds, but a late record of nesting is mentioned in the body of the work.

Pedioecetes phasianellus columbianus. Sclater includes *campestris* in the list of breeders, but not *columbianus,* and seems rather doubtful about the latter occurring in the state. The facts are that all sharp-tailed grouse now in Colorado are almost typical *columbianus* and that the form different from *columbianus,* which used to occur in great numbers in northeastern Colorado, is now extinct in the state.

Astur atricapillus striatulus. Sclater gives *Astur atricapillus* as a "rather uncommon winter bird in Colorado," and says that it breeds "south perhaps to Idaho." While it is true that there is no specific record of a nest of a goshawk found in Colorado, yet the bird has been noted in summer in the state by several competent observers—among which records may be mentioned Lone Cone, near Coventry, July 27, 1907 (C. H. Smith); not rare July 6-17, 1905, in Middle Park

at Coulter and Hot Springs (Cary)—and in the Zuni Mountains, New Mexico. It has also been taken in summer in the San Francisco Mountains, Arizona, and a specimen now in the collection of the Biological Survey was taken at Tres Piedras, New Mexico, July 13, 1892, and undoubtedly represents a bird that had nested in the vicinity. But all of these breeding birds, from Idaho to Arizona and New Mexico, should be referred to the western form *striatulus*, and *atricapillus* should therefore be dropped from the list of Colorado breeders and its place taken by *striatulus*. The former remains, however, as a winter visitant to Colorado.

Asio flammeus. Sclater withdraws this species from the breeding list, but it should be retained; for a pair seen by A. K. Fisher at Sterling July 27, 1892, must be considered as breeding birds.

Strix varia. Not given by Sclater in his list of breeders, but if the species is to be admitted at all in the Colorado list it must be as a breeder, since eggs were secured at the same time with the original specimen.

Dryobates villosus villosus. Sclater does not include this form in the list of breeders; but the specimens on which the form was introduced into Colorado were nesting when taken. This is also the breeding form of the Arkansas Valley as far west at least as Lamar, where a specimen was taken by H. G. Smith June 20, 1904.

Passerella iliaca schistacea. Not included in Sclater as a breeder because no nest has been found in Colorado; but as almost all the records for the state are in June and July, it seems almost straining a point to exclude it from the breeding list.

Pipilo aberti. Excluded by Sclater. Its claim to a place in the Colorado list rests on a nest and eggs. It would be better to drop the species entirely from the list.

Nannus hiemalis. Excluded by Sclater, because there is no specific record of the finding of a nest. There seems to be reason for doubting that the July birds, seen by Gillette and Cooke, were nesting.

Toxostoma bendirei. Should be withdrawn from the list of breeders, for the breeding records of Christie are undoubtedly erroneous.

FROM FIELD AND STUDY

Position of Mourning Dove Nestlings.—In an article by F. C. Willard entitled "A Week Afield in Southern Arizona," which appeared in THE CONDOR for March-April, 1912, there occurs this statement: "The young Mourning Doves always face in the same direction." This may be true of this species in Arizona, but it does not hold good in Iowa, as a few notes made in 1907 will show.

The first mention of positions in nest, bearing date of June 18, refers to doves in a nest situated in an evergreen tree about three feet from the ground, favorably located for making drawings and photographs, and was visited for these purposes when the nestlings were about twelve days old, the boy who found the nest, showing the way. When we found them, one young dove faced north, the other south. "When I returned to photograph them both faced south."

Three other notes relate to nestlings in our yard that were visited daily. The older of these Mourning Doves was hatched June 17. The first note on this question bears date of June 23: "The parent bird sat with its tail north-by-west, and I expected to find the young facing southeast; but one was in that direction and the other in the opposite direction. It is the first time both of their heads were not together." Again, on June 24: "One youngster faced one way and the other in the opposite direction." A note on July 5 mentions that they faced the same way. These are all the notes that were made on this subject; but an impression remians that after June 24 they were more frequently found facing opposite directions.—ALTHEA R. SHERMAN.

Two New Arizona Records.— During my visit to Tucson, Arizona, in February and March of the present year, I had the pleasure of examining the collection of game birds gathered and mounted by Mrs. James Wheeler of that city. Among these were a pair of adult Little Brown Cranes (*Grus canadensis*), which gave the following measurements, as closely as could be ascertained: Length 35 in., bill 3.50, wing, 19 00. The small size of these birds was especially noticeable to one who had seen the larger cranes of the San Joaquin Valley, California.

In addition to these, Mrs. Wheeler had beautifully mounted a pair of American Golden-eyes (*Clangula clangula americana*), taken at Tucson; the male, a single bird, taken April 1, and the female taken about February 1, in company with pintails.

So far as I know these are two species not hitherto recorded from Arizona.—Jos. L. SLOANAKER.

A Bird New to Colorado.—I wish to record one more bird new to Colorado. This is the Eastern Robin (*Planesticus migratorius migratorius*). A bird taken near Crook, April 13, 1912, was so identified by H. C. Oberholser of the Biological Survey, and is now in the Colorado Museum of Natural History. Our common form is the Western Robin (*Planesticus migratorius propinquus*).—L. J. HERSEY.

February Bird Notes from Palm Springs.—In THE CONDOR for March, 1904 (pp. 40-45), appeared an article listing the birds found by Joseph Mailliard and myself in the vicinity of Palm Springs in midwinter—December 25, 1903, to January 2, 1904, inclusive. The article referred to describes the location and general features of this attractive winter resort. In brief, the small village called Palm Springs lies on the floor of the extreme western arm of the Colorado desert, in Riverside County, California. Although but 450 feet in elevation it is close against the east base of San Jacinto Peak which rises to an altitude of 10,800 feet within a horizontal distance of less than eight miles.

In February, 1912, I visited Palm Springs from the 9th to the 13th of that month for the purpose of gathering for the California Museum of Vertebrate Zoology a series of the gopher (*Thomomys perpallidus*) described from there in 1886, when the place was called Agua Caliente. Although my time was pretty fully occupied with the traps and at the skinning table, some bird notes were acquired, part of which, upon comparison with the 1903 observations, show themselves worth recording.

Prairie Falcon (*Falco mexicanus*). On February 9, as the train pulled in at Palm Springs Station, one flew from its perch at the top of a telegraph pole close by. An hour or so later one was seen in flight over the desert only a mile or two out from the village.

Screech Owl (*Otus osio* subsp.). Each evening the mellow notes of this owl were heard in the cottonwoods and pepper trees close about the houses of Palm Springs. The subspecies represented is wholly conjectural. Zonally and faunally both, the form *O. a. gilmani*, of the Colorado Valley, should be expected. But it is possible that the bird or birds heard were temporary visitants from the wooded mountain slopes a few miles distant and possessing San Diegan district representatives. In this case the screech owl would have been *O. a. bendirei*.

Costa Hummingbird (*Calypte costae*). Two adult males were seen on the 11th and two on the 13th, along the Tahquitz ditch where they were foraging among blossoming shrubs. This observation, together with that of the midwinter visit of 1903-04 convinces me that this hummingbird does winter regularly within the state, though in relatively small numbers. It is said that the sheltered arm of the desert in which Palm Springs is located, is the warmest place in California during the winter season. If this is true, others of our summer visitant category of birds may be expected to tarry through the winter there.

Western Raven (*Corvus corax sinuatus*). Seen in flight daily along the mountain sides back of town. Common on the desert along the railroad a few miles north.

Willow Goldfinch (*Astragalinus tristis salicamans*). A small company seen February 11 in the upper branches of a cottonwood. This goldfinch is rarely reported from the desert, even as a winter visitant.

Abert Towhee (*Pipilo aberti*). Abundant throughout the town and along the base of the hills skirted by the Tahquitz ditch. Far more numerous than in December, 1903.

Townsend Solitaire (*Myadestes townsendi*). At least two of these birds were constantly present in the pepper trees in front of the Desert Inn. Their flute-like call-notes were often heard, and one bird was seen to launch into a moderate song flight, the usually ecstatic and prolonged song being given in a rather subdued and abbreviated version. The nearest breeding locality of the Solitaire is the upper Transition zone of the San Bernardino Mountains.—J. GRINNELL.

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EDITORIAL NOTES AND NEWS

Ornithologists have always found difficulty in satisfactorily expressing the varying degrees of abundance of the species in a region. In spite of efforts to attain to an accurate diagnosis through statistical methods, no practically workable scheme is forthcoming. We still rely on various words, of very indefinite meaning to be sure, but which give to the mind some notion of numbers of individuals as compared with what they might be under ideal circumstances.

In *Science* for June 14, 1912, page 930, Mr. John Dryden Kuser calls attention to the multiplicity of words used, and misused, to designate relative abundance. He chooses a scale of eight members, as providing to his mind a workable nomenclature of occurrence. These are: abundant, common, frequent, uncommon, occasional, rare, scarce and irregular.

To our minds just four terms come nearer the ticket: abundant, common, fairly common, and rare. "Fairly common" equals Kuser's "frequent", the latter being objectionable because of equivocal meaning. Any closer definition, short of actual censuses, seems to us futile. Of course other qualifying terms may be employed to advantage. A winter visitant may be common, and either regularly or irregularly so. Another species may be rare but regular in its appearance, or it may be rare and casual (that is, "accidental", though we dislike the latter term). Uncommon, occasional, rare, and scarce, are too nearly synonymous to be serviceable all at the same time; "rare" is sufficient.

In this connection we wish to point out the flagrant misuse of the word "resident" in many lists and even authoritative text-books, where birds are described as being "summer *residents*" or "winter *residents*". Explicitly, *resident* means inhabiting a region continually, that is, throughout the year. Birds are either resident or non-resident (migrant); if of the latter class, they are either summer visitants, winter visitants or transients. A "visitant" may remain a few days in midwinter only, or it may be with us six months including the breeding season. A transient is, as a rule, a species which summers wholly north of the particular locality concerned and winters south of it; so that it occurs only during the period of migration.

The four seasonal categories of birds may therefore be correctly alluded to as resident, summer visitant, winter visitant, and transient. Relative numbers of individuals involved may be denoted by the terms abundant, common, fairly common, and rare.

Should the above suggestions have aroused difference of opinion on the part of any of our readers, we would be glad to publish open letters upon the subject.—J. G.

Mr. George Willett is spending the months of July and August in the vicinity of Sitka, Alaska, where he is making a study of the bird-life on the St. Lazaria Bird Reservation. This work is being carried on under the direction of Dr. T. S. Palmer and in the interests of the National Association of Audubon Societies.

Mr. Alexander Wetmore is stationed for the year in Porto Rico, where he is conducting investigations into the economic relations of the native birds under the auspices of the Bureau of Biological Survey. Mr. Wetmore reports a successful time so far. Porto Rican birds are relatively few in species, but many individually, and are thus important to local interests.

Pacific Coast Avifauna numbers 7 and 8 will be mailed free to Cooper Club members about August first. Number 7 is Willett's *Birds of the Pacific Slope of Southern California;* number 8 is *A Systematic List of the Birds of California* by J Grinnell.

The Editors beg to remind Cooper Club members that short "Field and Study" notes are of usually greater interest to the average reader of THE CONDOR, than the longer and more formal general articles. The season's experiences should have provided each one of us with information worth contributing in this way.

PUBLICATIONS REVIEWED

A HISTORY OF | THE BIRDS OF COLORADO | By WILLIAM LUTLEY SCLATER | M. A. [etc. two lines]. | With seventeen Plates and a Map | Witherby & Co. | 326 High Holborn London | 1912 | 8vo, pp. i-xxiv. 1-576 (Cloth, $5.00 net).

This, the latest addition to the State bird lists, is a thick octavo of nearly six hundred pages and with so much of it in fine print as to represent a very large amount of material. The book is dedicated to Gen. W. J. Palmer and the statement is made in the introduction that it was in accordance with his desire that the work was undertaken, and that the expenses of publication "have been defrayed by his sister-in-law, Mrs. William Lutley Sclater, and his brother-in-law, Mr. Chase Mellen, of New York." A photogravure of Gen. Palmer faces the title page.

The birds of the State, 392 [=really 395] in number, are divided into several categories: breeders 225, winter residents 28, migrants 33, and casual 106. There is an elaborate system of keys to families, genera and species constructed for the most part on the best modern lines, though occasionally they fail to be dichotomous. Under each species there is given first its printed records in Colorado and the reference to each, these references by the help of the bibliography being reduced to least possible compass. Next follows a rather full but very concise description of the adult male plumage, with a statement of the difference shown by the female and young. A paragraph gives the general distribution of the species, which is followed by a full statement of its range in Colorado, with the authority for each record. Under the heading of habits are given facts concerning the food, nesting, and various other interesting items.

As remarked in the introduction, the present volume is "founded on the very complete collection of Colorado birds formed during the last thirty-five years by Mr. Charles E. Aiken, of Colorado Springs." Mr. Aiken's collection is one of the largest ever brought together in the State and the most valuable part of the book consists in the numerous records from this collection now for the first time made public. The collection furnishes two new birds for Colorado—*Chordeiles acutipennis texensis*, taken by Mr. Aiken near Trinidad, and *Empidonax traillii alnorum*, taken by him near Limon—and restores one form—*Coccyzus americanus*—that was at one time admitted to the State list but had been dropped for lack of positive proof of its occurrence.

The seventeen reproductions of excellent photographs by Rockwell, Warren and Nash are printed on a high-grade paper that presents them to good advantage.

The volume contains an elaborate bibliography comprising "a list of all the titles up to December, 1910, containing anything of importance for the study of Colorado ornithology." The list numbers 294 titles. The four publications of Cooke on Colorado birds had listed 343 titles in his bibliographies. Sclater omits 75 of these in his bibliography and adds 17 published previous to 1909 and 9 titles that appeared in 1910, making the 294 titles. Including the 91 less important titles, Cooke's bibliographies totaled 434 titles, to which he can now add 93 more, making a total of 527 titles in his Colorado bibliography.

A useful feature of the volume is a "Gazetteer" of the several hundred localities mentioned in the work. The volume closes with an unusually full and satisfactory index.

Mr. Sclater has made good use of his opportunities and has produced a thoroughly good book. It is up to date in its nomenclature and faultless in its typography. It easily takes rank among the very best of the State bird lists.—W. W. C.

MINUTES OF COOPER CLUB MEETINGS

SOUTHERN DIVISION

APRIL—The April meeting of the Southern Division of the Cooper Ornithological Club was held on Thursday evening, April 25, 1912, in the office of H. J. Lelande, 246 Wilcox building, Los Angeles, with President Morcom in the chair and the following members present: Blaine, Chambers, Daggett, Gray, Howell, Howard, Hubbs, Antonin and Alphonse Jay, Judson, Lamb, Miller, Owen, Rich, Robertson, Wood.

The President appointed Mr. Daggett as Secretary.

The minutes of the Southern Division for March were read and approved. A newspaper clipping of an article by Mr. J. Buckland, of the Royal Colonial Institute, England, was read. This dealt with the terrible inroads on bird life due to the demands of fashion for plumage.

On motion of Robertson, seconded by Miller, and duly carried, the Secretary was instructed to cast the ballot electing to active membership Mr. James Buckland, proposed at the last meeting.

Applications for membership were presented as follows: Lansing K. Tevis, Bakersfield, Calif., proposed by J. S. Douglas; Kate W. McGraw, 2301 Hearst avenue, Berkeley, and Asa C. Chandler, Maplewood, N. J., both proposed by H. C. Bryant; George Wood, Hollywood, Calif., proposed by J. E. Law; C. W. Chamberlain, Lancaster, Mass., proposed by A. B. Howell.

On motion carried the resignation of Willis H. Jackson was duly accepted. Adjourned.—F. S. DAGGETT, *Sec'y pro tem.*

For Sale, Exchange and Want Column.—In this space members of the Cooper Club are allowed one notice of about 35 words in each issue free of charge. Books and magazines can be offered for sale or exchange; bird skins and eggs can be offered in exchange, but *not for sale*. Notices must be written plainly, on one side only of a clean sheet of paper. For this department address W. LEE CHAMBERS, *Eagle Rock, Los Angeles Co., Cal.*

WANTED—The Condor, vols. V to XII, inclusive. JOHN C. PHILLIPS, *Wenham, Mass.*

THE GREAT AUK—A Record of Sales of Birds and Eggs by Public Auction in Great Britain, 1806-1910, by Thos. Parkin; 36 pages and 5 plates. A postal money order for two shillings sent direct to MR. THOMAS PARKIN, *High Wickham, Hastings, England*, will bring a copy by return mail.

WANTED FOR CASH—BIRD LORE, a complete set; also vols. 1, 2, 3, 7, 10, complete or any odd numbers of these vols. THE AUK, vols. 1 to 10 inclusive; also any magazines or books on ornithology. J. N. SWIFT, *Stockport, O.*

WANTED—Collecting parties desiring to visit the Pacific coast islands south of San Francisco to Magdalena Bay, Mex., may charter the fast boat "Flyer". Special rates to Cooper Club members and their friends. Write C. B. LINTON INVESTMENT CO., *Long Beach, Cal.*

WANTED—*Nidiologist*: vol. I, nos. 2, 5, 6; *Osprey*, vol. I, no. 2; vol. IV, no. 3; vol. V, no. 3; *Auk*, vols. I to VIII, XI, XII, XIII, XVI and XXVIII, vol. IX, no. 3, vol. XXI, no. 3; *Journ. Maine Ornith. Soc.*, vols. I-II, vol. III, no. 1, 4; vol IV, nos. 2, 3; vol. V, no. 1; vol. IX, nos. 3, 4; *Bull. Mich. Ornith. Club*, any complete vols. Cash or exchange. DR. T. W. RICHARDS, *1207 19th St. N. W., Washington, D. C.*

FOR SALE—Various odd numbers of ornithological magazines and other publications, including the following: O and O, vol. VI, nos. 2-10; vol. VII; vol. VIII, nos. 2-7. The Observer, vol. III, nos. 1, 5, 9; vol. V; vol. VI, nos. 1-11; vol. VIII, nos. 2-10. R. W. SHUFELDT, *3356 18th Street, Washington, D. C.*

I WILL PAY a good price for the following publications, all to be sound, in their original covers and suitable for binding. I will accept bound vols. when bound in with original covers. Birds, Birds and Nature, vols. 1 to 11 inclusive. The Oologist of Utica, N. Y., with its continuation the Ornithologist & Oologist, vols. 1 to 6 inclusive, all nos. of vol. 9 except 1, 5, 11 and 12; The Oregon Naturalist, nos. 2 & 3, vol. 1, nos. 1 & 2, vol. 2; Bulletin of Michigan Ornithological Club, all nos. issued; Birds of Middle & N. A. by Ridgway, part 5; Catalogue of Canadian Birds, by Macoun, part 1; Wilson Bulletin, no. 8; The Iowa Ornithologist, vols. 2, 3 & 4; The Western Ornithologist, all nos. issued after no. 1 of vol. 5; The Petrel, all nos. issued after no. 1 of vol. 1; The Atlantic Slope Naturalist, all nos. issued except nos. 2, 3, 5 of vol. 1; also all numbers issued of the following: The Ornithologist and Botanist; The Oologist's Exchange; The Wolverine Naturalist; The Oologist's Advertiser; The Owl; Stormy Petrel; Gameland; The Museum; Curlew; The Hummer; The Egg Collector; The Bittern; Ohio Naturalist; Cassinia, and many others too numerous to mention, so write me what you have. I have complete vols. of Oologist and Bird-Lore for exchange. GEORGE SETH GUION, *Napoleonville, La.*

WANTED—Correspondence with all persons who have done any kind of ornithological work in Wyoming. Send me names and addresses of yourselves and friends. ERNEST PILLSBURY WALKER, *Dept. of Biology, Univ. of Wyom., Laramie, Wyom.*

WANTED—I will give two dollars cash for EACH number, in ORIGINAL COVERS, CLEAN and in PERFECT CONDITION for binding, of the following publications, to-wit: Wilson Bulletin, nos. 4, 6, 7; The Osprey (new series), vol. I (1902), no. 7; The Oologist, vol. III (1886) vol. IV (1887), no. 1; vol. V (1888), no. 6; vol. VI (1889), no. 4; The Journal of the Maine Ornithological Society, vol. IV, numbers 3 and 4; vol. V, no. 3; The Iowa Ornithologist, vol. II, no. 4; vol. IV, nos. 2 and 4.—G. H. MESSENGER, President Linden Bank, *Linden, Iowa.*

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